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SPECIAL PROVISIONS

1. General.

Perform the work under this construction contract for Project Description as seen on Highway Work Proposal and in FIIPS, 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, 2021 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 (20200629)

2. Scope of Work.

The work under this contract shall consist of Enter the major work categories 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.

Working Day Ribbon

Time Frame Button

Provide the time frame for construction of the project within the Enter Year 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.

Note to Designer: Provide the start date if work needs to begin by a certain date to ensure expected project completion. Delete if not applicable to the project.

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

Fall Suspension Button

The schedule of operations as required under standard spec 108.9.2 shall provide for Enter completed work

When, in the fall of Year the work will be suspended, after completion of the Enter required construction, 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 Year the work resumes. Construction operations shall be resumed in the spring of Year the work resumes within ten days after the date on which a written order to do so has been issued by the engineer.

0031 (20090901)

Expedited Schedule Button

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

Working Day Interim Liquidated Damages Button

At the beginning of the List appropriate construction operations operations, close Route # / Street Name to through traffic for a maximum of # of working days working days. Do not reopen until completing the following work: List appropriate construction operations.

If the contractor fails to complete the work necessary to reopen Route # / Street Name to traffic within # of working days working days, the department will assess the contractor $Dollar amount of Interim Liquidated Damages in interim liquidated damages for each working day contract work remains incomplete beyond # of working days working days. An entire working day will be charged for any period of time within a working day that the road remains closed beyond 12:01 AM.

0083 (20151210)

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

Fish

Fish Spawning

There shall be no instream disturbance of waterway name as a result of construction activity under or for this contract, ***Select from drop-down***, in order to avoid adverse impacts upon the spawning of fish species.

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)

Birds

Migratory Birds

Swallow and other migratory birds' nests have been observed on or under the existing bridge. All active nests (when eggs or young are present) of migratory birds are protected under the federal Migratory Bird Treaty Act.

The nesting season for swallows and other birds is usually between May 1 and August 30. Either prevent active nests from becoming established, or apply for a depredation permit from the US Fish and Wildlife Service for work that may disturb or destroy active nests. The need for a permit may be avoided by removing the existing bridge structure prior to nest occupation by birds, or clearing nests from all structures before the nests become active in early spring. As a last resort, prevent birds from nesting by installing a suitable netting device on the remaining structure prior to nesting activity. Include the cost for preventing nesting in the cost of ***Select from drop-down***.

0074 (20090901)

Northern Long Eared Bats

Tree clearing activities have the potential to impact the federally-listed northern long-eared bat (NLEB), a species that roosts in trees during their active season (April 1 to September 30) and hibernates in caves and mines during their inactive season.

Northern Long-Eared Bats - Special Provisions DELETE ALL DESIGN NOTES FROM YOUR SPECIAL PROVISIONS

Note to Designer:

Tree clearing activities have the potential to impact the federally-listed northern long-eared bat (NLEB), a species that roosts in trees during their active season (April 1 to September 30) and hibernates in caves and mines during their inactive season (October 1 to March 31).

The following special provisions for tree clearing were developed to address the northern long-eared bat on WisDOT projects. Standard spec 108.9 will be adequate to address contract suspensions and/or time extensions if contract time is suspended due to consultation period with USFWS

Coordinate with the WisDOT Regional Environmental Coordinator (REC) to determine appropriate specification.

Add the appropriate specification (A, B, C or D) to the Prosecution & Progress article.

Note to Field Staff: All necessary erosion control shall be ordered by the department staff through an erosion control mobilization.

Specification A: Trees cleared by others prior to highway construction

Northern Long-eared Bat *(Myotis septentrionalis)*

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

The department has contracted with others to cut all trees for this project prior to construction. Remove any downed trees and grub the stumps and any remaining vegetation within the identified grubbing limits.

If additional trees need to be removed, no clearing shall occur without prior approval from the engineer, following coordination with the WisDOT REC. Additional tree removal beyond the area originally specified will require consultation with the United States Fish and Wildlife Service (USFWS) and may require a bat presence/absence survey. Notify the engineer if additional clearing cannot be avoided to begin coordination with the WisDOT REC. The WisDOT REC will initiate consultation with the USFWS and determine if a survey is necessary.

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 approval letter for the ECIP.

Specification B: Trees to be cleared by the highway contractor as a part of the project. Clearing prohibited between June 1 and July 31.

Northern Long-eared Bat *(Myotis septentrionalis)*

Northern Long-eared Bats (NLEB) have the potential to inhabit the project limits because they roost in trees. Roosts 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.

Specification C: Trees to be cleared by the highway contractor as a part of the project but no USFWS restrictions.

Northern Long-eared Bat *(Myotis septentrionalis)*

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

In accordance to the final 4(d) rule issued for the NLEB, the department has determined that the proposed activity may affect, but will not result in prohibited take of the NLEB. The activity involves tree removal, but will not occur within 0.25 miles of a known hibernacula, nor will the activity remove a known maternity roost tree or any other tree within 150 feet of a known maternity roost tree.

If additional trees need to be removed, no Clearing shall occur without prior approval from the engineer, following coordination with the WisDOT REC. Additional tree removal beyond the area originally specified will require consultation with the United States Fish and Wildlife Service (USFWS) and may require a bat presence/absence survey. Notify the engineer if additional Clearing cannot be avoided to begin coordination with the WisDOT REC. The WisDOT REC will initiate consultation with the USFWS and determine if a survey is necessary.

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.

Specification D: Project doesn't require any clearing.

Northern Long-eared Bat *(Myotis septentrionalis)*

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

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

Calendar Day Ribbon

Time Frame Button

Provide the time frame for construction of the project within the Enter Year 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.

Note to Designer: Provide the start date if work needs to begin by a certain date to ensure expected project completion. Delete if not applicable to the project.

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

Fall Suspension Button

The schedule of operations as required under standard spec 108.9.2 shall provide for Enter completed work

When, in the fall of Year the work will be suspended, after completion of the Enter required construction, 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 Year the work resumes. Construction operations shall be resumed in the spring of Year the work resumes within ten days after the date on which a written order to do so has been issued by the engineer.

0031 (20090901)

Expedited Schedule Button

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

Eliminate Excusable Delays Calendar Days Interim Liquidated Damages Button

Prior to beginning operations under this contract, submit in writing the proposed schedule of operations to the engineer for approval.

At the beginning of List appropriate construction operations operations, close Route # / Street Name to through traffic for a maximum of Enter # of calendar days calendar days. Do not reopen until completing the following work: Describe Work.

If the contractor fails to complete the work necessary to reopen Route # / Street Name to traffic within # of calendar days calendar days, the department will assess the contractor $dollar amount for damages in interim liquidated damages for each calendar day the contract work remains incomplete beyond # of calendar days calendar days. An entire calendar day will be charged for any period of time within a calendar day that the road remains closed beyond 12:01 AM.

0009 (20151210)

Do not include the following "no excuse" language unless it has been discussed and justified with oversight engineers:

The department will not grant time extensions to the interim completion dates specified above for the following:

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

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

Restrict Weather Delays Calendar Days Liquidated Damages Button

Prior to beginning operations under this contract, submit in writing the proposed schedule of operations to the engineer for approval.

At the beginning of List appropriate construction operations operations, close Route # / Street Name to through traffic for a maximum of Enter # of calendar days calendar days. Do not reopen until completing the following work: Describe Work.

Replace standard spec 108.10.2.2(1) with the following:

(1) The engineer will award a time extension for severe weather on calendar day and completion date contracts. Submit a request for severe weather days if the number of adverse weather days, as defined in standard spec 101.3, exceeds the anticipated number of adverse weather days tabulated below.

Total Anticipated Adverse Weather Days for Each Calendar Month[2]

Jan[1]	31	Aug	# of Adverse Weather Days
Feb[1]	28	Sept	# of Adverse Weather Days
Mar[1]	31	Oct	# of Adverse Weather Days
April	# of Adverse Weather Days	Nov 1 through 15	# of Adverse Weather Days
May	# of Adverse Weather Days	Nov 16 through 30[1]	15
June	# of Adverse Weather Days	Dec[1]	31
July	# of Adverse Weather Days		

[1] Includes an anticipated winter suspension from November 16 through March 31.

[2] The number of days will be modified in the special provision for year-round and painting contracts.

If the contractor fails to complete the work necessary to reopen Route # / Street Name to traffic within # of calendar days calendar days, the department will assess the contractor $dollar amount for damages in interim liquidated damages for each calendar day the contract work remains incomplete beyond # of calendar days calendar days. An entire calendar day will be charged for any period of time within a calendar day that the road remains closed beyond 12:01 AM.

0009 (20151210)

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

Eliminate Excusable Delays Fixed Date Interim Liquidated Damages Button

Complete construction operations on Route # / Street Name to the stage necessary to reopen it to through traffic prior to 12:01 AM Enter Date. Do not reopen until completing the following work: List appropriate Construction Operations.

If the contractor fails to complete the work necessary to reopen Route # / Street Name to through traffic prior to 12:01 AM Enter date, the department will assess the contractor $dollar amount for damages in interim liquidated damages for each calendar day that the roadway remains closed after 12:01 AM, Enter Date. An entire calendar day will be charged for any period of time within a calendar day that the road remains closed beyond 12:01 AM.

0033 (20151210)

Do not include the following "no excuse" language unless it has been discussed and justified with oversight engineers:

The department will not grant time extensions to the interim completion dates specified above for the following:

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

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

Restrict Weather Delays Fixed Date Interim Liquidated Damages Button

Complete construction operations on Route # / Street Name to the stage necessary to reopen it to through traffic prior to 12:01 AM Enter Date. Do not reopen until completing the following work: List appropriate Construction Operations.

Replace standard spec 108.10.2.2(1) with the following:

(1) The engineer will award a time extension for severe weather on calendar day and completion date contracts. Submit a request for severe weather days if the number of adverse weather days, as defined in standard spec 101.3, exceeds the anticipated number of adverse weather days tabulated below.

Total Anticipated Adverse Weather Days for Each Calendar Month[2]

Jan[1]	31	Aug	# of Adverse Weather Days
Feb[1]	28	Sept	# of Adverse Weather Days
Mar[1]	31	Oct	# of Adverse Weather Days
April	# of Adverse Weather Days	Nov 1 through 15	# of Adverse Weather Days
May	# of Adverse Weather Days	Nov 16 through 30[1]	15
June	# of Adverse Weather Days	Dec[1]	31
July	# of Adverse Weather Days		

[1] Includes an anticipated winter suspension from November 16 through March 31.

[2] The number of days will be modified in the special provision for year-round and painting contracts.

If the contractor fails to complete the work necessary to reopen Route # / Street Name to through traffic prior to 12:01 AM Enter date, the department will assess the contractor $dollar amount for damages in interim liquidated damages for each calendar day that the roadway remains closed after 12:01 AM, Enter Date. An entire calendar day will be charged for any period of time within a calendar day that the road remains closed beyond 12:01 AM.

0033 (20151210)

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

Fish Button

Fish Spawning

There shall be no instream disturbance of waterway name as a result of construction activity under or for this contract, ***Select from drop-down***, in order to avoid adverse impacts upon the spawning of fish species.

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)

Birds Button

Migratory Birds

Swallow and other migratory birds' nests have been observed on or under the existing bridge. All active nests (when eggs or young are present) of migratory birds are protected under the federal Migratory Bird Treaty Act.

The nesting season for swallows and other birds is usually between May 1 and August 30. Either prevent active nests from becoming established, or apply for a depredation permit from the US Fish and Wildlife

Service for work that may disturb or destroy active nests. The need for a permit may be avoided by removing the existing bridge structure prior to nest occupation by birds, or clearing nests from all structures before the nests become active in early spring. As a last resort, prevent birds from nesting by installing a suitable netting device on the remaining structure prior to nesting activity. Include the cost for preventing nesting in the cost of ***Select from drop-down***.

0074 (20090901)

Northern Long Eared Bats

Tree clearing activities have the potential to impact the federally-listed northern long-eared bat (NLEB), a species that roosts in trees during their active season (April 1 to September 30) and hibernates in caves and mines during their inactive season.

Northern Long-Eared Bats - Special Provisions DELETE ALL DESIGN NOTES FROM YOUR SPECIAL PROVISIONS

Note to Designer:

Tree clearing activities have the potential to impact the federally-listed northern long-eared bat (NLEB), a species that roosts in trees during their active season (April 1 to September 30) and hibernates in caves and mines during their inactive season (October 1 to March 31).

The following special provisions for tree clearing were developed to address the northern long-eared bat on WisDOT projects. Standard spec 108.9 will be adequate to address contract suspensions and/or time extensions if contract time is suspended due to consultation period with USFWS

Coordinate with the WisDOT Regional Environmental Coordinator (REC) to determine appropriate specification.

Add the appropriate specification (A, B, C or D) to the Prosecution & Progress article.

Note to Field Staff: All necessary erosion control shall be ordered by the department staff through an erosion control mobilization.

Specification A: Trees cleared by others prior to highway construction

Northern Long-eared Bat *(Myotis septentrionalis)*

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

The department has contracted with others to cut all trees for this project prior to construction. Remove any downed trees and grub the stumps and any remaining vegetation within the identified grubbing limits.

If additional trees need to be removed, no clearing shall occur without prior approval from the engineer, following coordination with the WisDOT REC. Additional tree removal beyond the area originally specified will require consultation with the United States Fish and Wildlife Service (USFWS) and may require a bat presence/absence survey. Notify the engineer if additional clearing cannot be avoided to begin coordination with the WisDOT REC. The WisDOT REC will initiate consultation with the USFWS and determine if a survey is necessary.

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 approval letter for the ECIP.

Specification B: Trees to be cleared by the highway contractor as a part of the project. Clearing prohibited between June 1 and July 31.

Northern Long-eared Bat *(Myotis septentrionalis)*

Northern Long-eared Bats (NLEB) have the potential to inhabit the project limits because they roost in trees. Roosts 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.

Specification C: Trees to be cleared by the highway contractor as a part of the project but no USFWS restrictions.

Northern Long-eared Bat *(Myotis septentrionalis)*

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

In accordance to the final 4(d) rule issued for the NLEB, the department has determined that the proposed activity may affect, but will not result in prohibited take of the NLEB. The activity involves tree removal, but will not occur within 0.25 miles of a known hibernacula, nor will the activity remove a known maternity roost tree or any other tree within 150 feet of a known maternity roost tree.

If additional trees need to be removed, no Clearing shall occur without prior approval from the engineer, following coordination with the WisDOT REC. Additional tree removal beyond the area originally specified will require consultation with the United States Fish and Wildlife Service (USFWS) and may require a bat presence/absence survey. Notify the engineer if additional Clearing cannot be avoided to begin coordination with the WisDOT REC. The WisDOT REC will initiate consultation with the USFWS and determine if a survey is necessary.

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.

Specification D: Project doesn't require any clearing.

Northern Long-eared Bat *(Myotis septentrionalis)*

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

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

Completion Date Ribbon

Time Frame Button

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

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

Expedited Schedule Button

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

Eliminate Excusable Delays Calendar Days Interim Liquidated Damages Button

At the beginning of List appropriate construction operations operations, close Route # / Street Name to through traffic for a maximum of Enter # of calendar days calendar days. Do not reopen until completing the following work: Describe Work.

If the contractor fails to complete the work necessary to reopen Route # / Street Name to traffic within # of calendar days calendar days, the department will assess the contractor $dollar amount for damages in interim liquidated damages for each calendar day the contract work remains incomplete beyond # of calendar days calendar days. An entire calendar day will be charged for any period of time within a calendar day that the road remains closed beyond 12:01 AM.

0009 (20151210)

Do not include the following "no excuse" language unless it has been discussed and justified with oversight engineers:

The department will not grant time extensions to the interim completion dates specified above for the following:

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

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

Restrict Weather Delays Calendar Days Interim Liquidated Damages Button

At the beginning of List appropriate construction operations operations, close Route # / Street Name to through traffic for a maximum of Enter # of calendar days calendar days. Do not reopen until completing the following work: Describe Work.

Replace standard spec 108.10.2.2(1) with the following:

(1) The engineer will award a time extension for severe weather on calendar day and completion date contracts. Submit a request for severe weather days if the number of adverse weather days, as defined in standard spec 101.3, exceeds the anticipated number of adverse weather days tabulated below.

Total Anticipated Adverse Weather Days for Each Calendar Month[2]

Jan[1]	31	Aug	# of Adverse Weather Days
Feb[1]	28	Sept	# of Adverse Weather Days
Mar[1]	31	Oct	# of Adverse Weather Days
April	# of Adverse Weather Days	Nov 1 through 15	# of Adverse Weather Days
May	# of Adverse Weather Days	Nov 16 through 30[1]	15
June	# of Adverse Weather Days	Dec[1]	31
July	# of Adverse Weather Days		

[1] Includes an anticipated winter suspension from November 16 through March 31.

[2] The number of days will be modified in the special provision for year-round and painting contracts.

If the contractor fails to complete the work necessary to reopen Route # / Street Name to traffic within # of calendar days calendar days, the department will assess the contractor $dollar amount for damages in interim liquidated damages for each calendar day the contract work remains incomplete beyond # of calendar days calendar days. An entire calendar day will be charged for any period of time within a calendar day that the road remains closed beyond 12:01 AM.

0009 (20151210)

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

Eliminate Excusable Delays Fixed Date Interim Liquidated Damages Button

Complete construction operations on Route # / Street Name to the stage necessary to reopen it to through traffic prior to 12:01 AM Enter Date. Do not reopen until completing the following work: List appropriate Construction Operations.

If the contractor fails to complete the work necessary to reopen Route # / Street Name to through traffic prior to 12:01 AM Enter date, the department will assess the contractor $dollar amount for damages in interim liquidated damages for each calendar day that the roadway remains closed after 12:01 AM, Enter Date. An entire calendar day will be charged for any period of time within a calendar day that the road remains closed beyond 12:01 AM.

0033 (20151210)

Do not include the following "no excuse" language unless it has been discussed and justified with oversight engineers:

The department will not grant time extensions to the interim completion dates specified above for the following:

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

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

Restrict Weather Delays Fixed Date Interim Liquidated Damages Button

Complete construction operations on Route # / Street Name to the stage necessary to reopen it to through traffic prior to 12:01 AM Enter Date. Do not reopen until completing the following work: List appropriate Construction Operations.

Replace standard spec 108.10.2.2(1) with the following:

(1) The engineer will award a time extension for severe weather on calendar day and completion date contracts. Submit a request for severe weather days if the number of adverse weather days, as defined in standard spec 101.3, exceeds the anticipated number of adverse weather days tabulated below.

Total Anticipated Adverse Weather Days for Each Calendar Month[2]

Jan[1]	31	Aug	# of Adverse Weather Days
Feb[1]	28	Sept	# of Adverse Weather Days
Mar[1]	31	Oct	# of Adverse Weather Days
April	# of Adverse Weather Days	Nov 1 through 15	# of Adverse Weather Days
May	# of Adverse Weather Days	Nov 16 through 30[1]	15
June	# of Adverse Weather Days	Dec[1]	31
July	# of Adverse Weather Days		

[1] Includes an anticipated winter suspension from November 16 through March 31.

[2] The number of days will be modified in the special provision for year-round and painting contracts.

If the contractor fails to complete the work necessary to reopen Route # / Street Name to through traffic prior to 12:01 AM Enter date, the department will assess the contractor $dollar amount for damages in interim liquidated damages for each calendar day that the roadway remains closed after 12:01 AM, Enter

Date. An entire calendar day will be charged for any period of time within a calendar day that the road remains closed beyond 12:01 AM.

0033 (20151210)

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

Eliminate Excusable Delays Multiple Projects Interim Liquidated Damages Button

If the contractor fails to complete all work on project Project ID # within # of days calendar days from the start date, the department will assess the contractor $ Dollar Amount of Interim Liquidated Damages in interim liquidated damages for each calendar day contract work remains incomplete beyond # of days calendar days. An entire calendar day will be charged for any period of time withing a calendar day that the road remains closed beyond 12:01 AM.

0059 (20151210)

If the contractor fails to complete all work on project Project ID # within # of days calendar days from the start date, the department will assess the contractor $ Dollar Amount of Interim Liquidated Damages in interim liquidated damages for each calendar day contract work remains incomplete beyond # of days calendar days. An entire calendar day will be charged for any period of time withing a calendar day that the road remains closed beyond 12:01 AM.

0057 (20090901)

Do not include the following "no excuse" language unless it has been discussed and justified with oversight engineers:

The department will not grant time extensions to the interim completion dates specified above for the following:

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

The department will administer contract time as specified in standard spec 108.9 for each project in the contract. If contract time expires before completing all work on all contract projects, additional liquidated damages will be affixed according to standard spec 108.11.

0058 (20090901)

Fish Button

Fish Spawning

There shall be no instream disturbance of waterway name as a result of construction activity under or for this contract, ***Select from drop-down***, in order to avoid adverse impacts upon the spawning of fish species.

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)

Birds Button

Migratory Birds

Swallow and other migratory birds' nests have been observed on or under the existing bridge. All active nests (when eggs or young are present) of migratory birds are protected under the federal Migratory Bird Treaty Act.

The nesting season for swallows and other birds is usually between May 1 and August 30. Either prevent active nests from becoming established, or apply for a depredation permit from the US Fish and Wildlife Service for work that may disturb or destroy active nests. The need for a permit may be avoided by removing the existing bridge structure prior to nest occupation by birds, or clearing nests from all structures before the nests become active in early spring. As a last resort, prevent birds from nesting by

installing a suitable netting device on the remaining structure prior to nesting activity. Include the cost for preventing nesting in the cost of ***Select from drop-down***.

0074 (20090901)

Northern Long Eared Bats

Tree clearing activities have the potential to impact the federally-listed northern long-eared bat (NLEB), a species that roosts in trees during their active season (April 1 to September 30) and hibernates in caves and mines during their inactive season.

Northern Long-Eared Bats - Special Provisions DELETE ALL DESIGN NOTES FROM YOUR SPECIAL PROVISIONS

Note to Designer:

Tree clearing activities have the potential to impact the federally-listed northern long-eared bat (NLEB), a species that roosts in trees during their active season (April 1 to September 30) and hibernates in caves and mines during their inactive season (October 1 to March 31).

The following special provisions for tree clearing were developed to address the northern long-eared bat on WisDOT projects. Standard spec 108.9 will be adequate to address contract suspensions and/or time extensions if contract time is suspended due to consultation period with USFWS

Coordinate with the WisDOT Regional Environmental Coordinator (REC) to determine appropriate specification.

Add the appropriate specification (A, B, C or D) to the Prosecution & Progress article.

Note to Field Staff: All necessary erosion control shall be ordered by the department staff through an erosion control mobilization.

Specification A: Trees cleared by others prior to highway construction

Northern Long-eared Bat *(Myotis septentrionalis)*

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

The department has contracted with others to cut all trees for this project prior to construction. Remove any downed trees and grub the stumps and any remaining vegetation within the identified grubbing limits.

If additional trees need to be removed, no clearing shall occur without prior approval from the engineer, following coordination with the WisDOT REC. Additional tree removal beyond the area originally specified will require consultation with the United States Fish and Wildlife Service (USFWS) and may require a bat presence/absence survey. Notify the engineer if additional clearing cannot be avoided to begin coordination with the WisDOT REC. The WisDOT REC will initiate consultation with the USFWS and determine if a survey is necessary.

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 approval letter for the ECIP.

Specification B: Trees to be cleared by the highway contractor as a part of the project. Clearing prohibited between June 1 and July 31.

Northern Long-eared Bat *(Myotis septentrionalis)*

Northern Long-eared Bats (NLEB) have the potential to inhabit the project limits because they roost in trees. Roosts 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.

Specification C: Trees to be cleared by the highway contractor as a part of the project but no USFWS restrictions.

Northern Long-eared Bat *(Myotis septentrionalis)*

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

In accordance to the final 4(d) rule issued for the NLEB, the department has determined that the proposed activity may affect, but will not result in prohibited take of the NLEB. The activity involves tree removal, but will not occur within 0.25 miles of a known hibernacula, nor will the activity remove a known maternity roost tree or any other tree within 150 feet of a known maternity roost tree.

If additional trees need to be removed, no Clearing shall occur without prior approval from the engineer, following coordination with the WisDOT REC. Additional tree removal beyond the area originally specified will require consultation with the United States Fish and Wildlife Service (USFWS) and may require a bat presence/absence survey. Notify the engineer if additional Clearing cannot be avoided to begin coordination with the WisDOT REC. The WisDOT REC will initiate consultation with the USFWS and determine if a survey is necessary.

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.

Specification D: Project doesn't require any clearing.

Northern Long-eared Bat *(Myotis septentrionalis)*

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

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

4. stp-000-000 Bid Item Name, Item SPV.####.###.

A Description

This special provision describes providing .

B Materials

Furnish .

TABLE 1

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN4
CELL	CELL	CELL	CELL
CELL	CELL	CELL	CELL

C Construction

Regular paragraphs styled Normal.

- First level bullet list.

1. First level numbered list.

Replace standard spec ###.#.#(#) with the following:

(1) Numbered paragraphs.

D Measurement

The department will measure bid item description by the unit acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.####.###	Bid Item Name	UNIT

Payment is full compensation for .

102-005 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Multiple projects: A, B, A&B. STSP 103-010 is also required.

5. stp-102-005 Proposal Guaranty.

A single proposal guaranty of $ Enter dollar amount of proposal guarantysubmitted with a bid proposal for project Enter project #, project Enter project # or projects Enter project # and Enter project # combined will be construed as applicable to all proposals submitted by the bidder for the work under this project, and no additional guaranty will be required for the other proposals submitted.

stp-102-005 (20030820)

102-010 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use when a pre-bid meeting is required. (If pre-bid meeting will be held, but is not mandatory for contractors to attend, then delete the word "mandatory" from this article.)

6. stp-102-010 Mandatory Pre-Bid Meeting.

Add the following to standard spec 102.3.1:

Prospective bidders are required to attend a mandatory pre-bid meeting at Enter date and time at Enter location.

No meeting minutes will be prepared. Issues discovered at the meeting will be handled by addendum.

stp-102-010 (20150630)

7. stp-103-005 Consideration of Proposals.

Replace standard spec 103.2(1) with the following:

The department is taking separate bids for the construction of this project under an alternate proposal, identified as project Enter project #.

The award of contract, if awarded, will be to the lowest responsible bidder among all bidders for either proposal, whose proposal complies with all requirements necessary to render it formal as determined conforming to standard spec 103.1.

stp-103-005 (20030820)

103-010 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Multiple projects: A, B, A&B. STSP 102-005 is also required

8. stp-103-010 Consideration of Proposals.

Replace standard spec 103.2(1) with the following:

The department is taking separate bids for the construction of project Enter project # and project Enter project # and a single bid for the combination of these projects under project Enter project #.

The award of contract, if awarded, will be to the lowest responsible bidder or bidders whose proposal or proposals complies or comply with all the requirements necessary to render it formal as determined according to the provisions of standard spec 103.1.

stp-103-010 (20030820)

9. stp-104-010 Partnering Charter.

Add the following to standard spec 104.1:

The department intends to encourage, support, and implement a partnering system on this contract with the full participation of the contractor and all subcontractors.

Partnering is a performance system designed to achieve an optimal relationship between all parties to a construction contract. Further, it is a method of conducting business in the construction profession without unnecessary, excessive, or disruptive external party involvement. The partnering system is structured to draw on the strengths of each participating organization to identify and achieve mutually profitable objectives.

The partnering system will consist of three main elements: preparation of a partnering charter, establishing and implementing a partnering effectiveness evaluation technique, and establishing and implementing an issue resolution procedure.

It is anticipated that within 14 calendar days of the issuance of a notice to proceed with construction, the department, its consultants, and the prime contractor on the project will participate, with their subcontractors, in a 1 day meeting to write a partnering charter.

The partnering charter is the basic manual for operating the partnering system. It includes, at a minimum, the mission of the project and the objectives of the project team. In addition, it outlines, in broad terms, the project evaluation methods to be used and the dispute resolution process to be applied to conflict issues as they arise on the job.

It is anticipated that the partnering charter meeting participants will establish and publish the partnering effectiveness evaluation method. This partnering evaluation method will set guidelines for periodically measuring project performance against the mission and objectives set out in the charter.

It is also anticipated that the partnering charter meeting participants will establish and publish the issue resolution procedure, designed to help resolve disputes quickly, satisfactorily, and as near as possible to the originating level of the dispute.

The contractor is required to participate in establishing these three elements of the partnering system in cooperation with the department and its consultants. Outside costs for effectuating the partnering effort will be mutually agreed to by both parties and will be shared equally.

The establishment of a partnership charter on this project will not change the legal relationship of the parties to the contract nor relieve either party from any of the terms of the contract.

stp-104-010 (20150630)

105-001 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Required in all contracts that contain sanitary sewer and water main construction.

10. stp-105-001 Municipality Acceptance of Sanitary Sewer and Water Main Construction.

Both the department and Enter the name of the municipality (City of, Town of, Village of) personnel will inspect construction of sanitary sewer and water main under this contract. However, construction staking, testing, and acceptance of the sanitary sewer and water main construction will be by the Enter the name of the municipality (City of, Town of, Village of).

stp-105-001 (20140630)

105-002 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP when referencing specifications other than the standard spec such as municipality specifications, etc.

11. stp-105-002 Referenced Construction Specifications.

Construct the work enumerated below conforming to the Enter the name of the referenced specification. If there is a discrepancy or conflict between the referenced specification and the standard specifications regarding contract administration, part 1 of the standard specifications governs.

Conform to the referenced construction specifications for the following:

List work elements conforming to the referenced construction specifications.

List work elements conforming to the referenced construction specifications.

List work elements conforming to the referenced construction specifications.

List work elements conforming to the referenced construction specifications.

stp-105-002 (20130615)

12. stp-105-005 Timely Decision Making Manual.

Use the Timely Decision Making Manual (TDM) on this contract. Coordinate with the department to modify the various published tools as necessary to meet the particular project needs and determine how to implement those tools under the contract. Ensure the full participation of the contractor and its principal subcontractors throughout the term of the contract.

Forms and associated guidance are published in the TDM available at the department's Highway Construction Contract Information (HCCI) web site at:

https://wisconsindot.gov/rdwy/admin/tdm.doc

stp-105-005 (20151210)

107-001 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use when the hours of operating motorized equipment are different than standard spec 107.8(6), i.e., from 6:00 AM to 10:00 PM.

13. stp-107-001 Public Convenience and Safety.

Revise standard spec 107.8(6) as follows:

Check for and comply with local ordinances governing the hours of operation of construction equipment. Do not operate motorized construction equipment from Enter night time hour PM until the following Enter day time hour AM, unless prior written approval is obtained from the engineer.

stp-107-001 (20060512)

107-005 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Enter the dates and days that Holiday Work restrictions are in effect. Delete any unnecessary fields.

For Independence Day, if Independence Day falls on a:

- ***Sunday – suspend work from noon Friday, to 6:00 AM Tuesday;***
- ***Monday – suspend work from noon Friday, to 6:00 AM Tuesday;***
- ***Tuesday – suspend work from noon Friday, to 6:00 AM Wednesday;***
- ***Wednesday – suspend work from noon Tuesday, to 6:00 AM Thursday, OR***
- ***Wednesday – suspend work from noon Friday, the week before to 6:00 AM Monday, the week after;***
- ***Thursday – suspend work from noon Wednesday, to 6:00 AM Monday;***
- ***Friday – suspend work from noon Thursday, to 6:00 AM Monday;***
- ***Saturday – suspend work from noon Thursday, to 6:00 AM Monday.***

14. stp-107-005 Holiday Work Restrictions.

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

- From noon Friday, Enter date to 6:00 AM Tuesday, Enter date Enter name of holiday or event ;
- From noon Enter day, Enter date to 6:00 AM Enter day, Enter date Enter name of holiday or event ;
- From noon Friday, Enter date to 6:00 AM Tuesday, Enter date Enter name of holiday or event .

stp-107-005 (20181119)

107-026 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use STSP 107-026 on projects that require less extensive flagging. Use STSP 107-034 on projects that require more extensive flagging. Use for all projects on or within 50 feet of railroad property, unless STSP 107-034 is used. Refer to FDM Procedure 19-15-35 for guidance on which railroad STSP to use. Refer to FDM Procedure 17-50-5 for guidance on insurance requirements. Confirm with the Region Railroad Coordinator.

- ***Unless authorized by the Railroads & Harbors Section, do not use Section A.6, Rail Security Awareness and Contractor Orientation. If needed use SCN for WCL/SSAM, use ERAIL for all other railroads.***
- ***Provide a separate railroad STSP (107-026 or 107-034) for each railroad company that owns property or tracks within the project limits; or, in the case of the state-owned railroad system, holds the operating agreement for the tracks.***

15. stp-107-026 Railroad Insurance and Coordination - *Select from drop-down.*

A. Description

Enter A1 or A2 and press F3

A.1 Railroad Insurance Requirements

In addition to standard spec 107.26, provide railroad protective liability insurance coverage as specified in standard spec 107.17.3. Enter B1, B2 or B3 and press F3

A.2 Train Operation

Enter one of the following: F (Freight only), P (Passenger & Freight present) or M (for Multiple Crossings) then press F3

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

Enter one of the following: BNSF; DME; ELS; ETE; PGR; SSAM; SOO; TR; UP; WSOR; WCL; WGN then press F3

A.4 Work by Railroad

The railroad will perform the work described in this section, except for work described in other special provisions, and will be accomplished without cost to the contractor. Enter a description of the work or write "None"

A.5 Temporary Grade Crossing

Enter C1 or C2 and press F3

A.6 Rail Security Awareness and Contractor Orientation

Enter SCN or ERAIL then press F3

stp-107-026 (20200629)

A1 Building Block Comply with standard spec 107.17 for all work affecting ***Select from drop-down*** property and any existing tracks.

A2 Building Block Comply with standard spec 107.17 for all work affecting ***Select from drop-down*** property and any existing tracks. The railroad will provide Enter the number of days days of flagging at it no expense to the project.

B1 Building Block Insurance is filed in the name of ***Select from drop-down***.

Notify evidence of the required coverage, and duration to Enter one of the following: IBNSF; IDME; IETE; IELS; IPGR; ISOO; ISSAM; ITR; IUP; IWSOR; IWCL; IWGN then press F3

Also send a copy to the following: Enter one of the following: NW; NC; NE; SW; SE then press F3

Include the following information on the insurance document:

- Project ID: Enter the PROJECT ID number
- Project Location: Enter the CITY & STATE
- Route Name: Enter the ROAD NAME and COUNTY NAME
- Crossing ID: Enter WisDOT CROSSING ID
- Railroad Subdivision: Enter the RAILROAD SUBDIVISION

- Railroad Milepost: Enter the RAILROAD MILEPOST
- Work Performed: Enter the WORK TO BE COMPLETED NEAR CROSSING

107-026 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

If multiple crossings delete the block above and utilize the table block below. If single crossing delete the table block below.

Enter T and press F3 (for multiple crossing otherwise delete)

IBNSF Building Block Daniel Peltier, Manager of Public Projects; 80 44th Avenue NE, Minneapolis, MN 55421; Telephone (763) 782-3495; E-mail daniel.peltier@bnsf.com to determine the applicable railroad rules and regulations. Once determined send the RPLI policy to ***Select from drop-down***. Approval of the policy will not take place until the Manager of Public Projects has been contacted.

IDME Building Block Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail: brian_osborne@cpr.ca

IETE Building Block Ryan Jonas, President, East Troy Railroad Museum; PO Box 943, East Troy, WI 53120; Telephone (414) 534-7175; E-mail ryan@easttroyrr.org.

IELS Building Block Tyler Delvaux, Director of Marketing/Customer Service; Customer Services Green Bay Operations, 529 S. Jefferson Street, Suite 108, Green Bay, WI 54305; Telephone (906) 786-0693; E-mail tyler.delvaux@elsrr.com.

IPGR Building Block Nik Shepard, Director of Crossings, Signals & Right of Way: 21778 Highview Avenue, Lakeview, MN 55044; Telephone (218) 324-2001; E-mail nshepard@progressiverail.com.

ISOO Building Block Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail: brian_osborne@cpr.ca

ISSAM Building Block Jackie Macewicz, Manager Public Works; 3912 S. Pokegama Road, Superior, WI 54880; Telephone (715) 345-2503; E-mail: Jackie.macewicz@cn.ca.

ITR Building Block Daniel Rickel, General Manager; PO Box 130, 17 South Marinette Street, Tomahawk, WI 54487; Telephone (715) 453-2303; E-mail: daniel.rickel@gwrr.com.

IUP Building Block David C. LaPlante, Senior Manager-Real Estate-Special and Public Projects, 1400 Douglas St. STOP 1690, Omaha, NE 68179; Telephone: (402) 544-8563; E-mail: dclaplante@up.com.

IWSOR Building Block Amanda Haggerty, Office Administrator; 1890 E Johnson Street, Madison, WI 53704; Telephone (608) 620-2048; E-mail: ahaggerty@watcocompanies.com.

IWCL Building Block Jackie Macewicz, Manager Public Works; 3912 S. Pokegama Road, Superior, WI 54880; Telephone (715) 345-2503; E-mail: Jackie.macewicz@cn.ca.

IWGN Building Block Greg Vreeland, General Manager; PO Box 46, Spooner, WI 54801; Telephone (715) 635-3200; E-mail greg@spoonertrainrifde.com.

NW Building Block Anna Davey, NW and NC Region Railroad Coordinator; 1701 N 4th Street, Superior, WI 54880; Telephone (715) 392-7960; E-mail: anna.davey@dot.wi.gov.

NC Building Block ***Choose an item.***

NE Building Block Jared Kinziger, NE and NC Region Railroad Coordinator; 944 Vanderperren Way, Green Bay, WI 54304; Telephone (920) 492-7713; E-mail: jared.kinziger@dot.wi.gov.

SW Building Block ***Choose an item.***

SE Building Block Paul Derksen, SE Region Railroad Coordinator; 141 N. W. Barstow Street, Waukesha, WI 53188; Telephone (262) 548-8770; E-mail: paul.derksen@dot.wi.gov.

T Building Block- Project ID: Enter the PROJECT ID number

- Work Performed: Enter the WORK TO BE COMPLETED NEAR CROSSING

#	Route Name	City/County	Crossing ID	RR Subdivision	RR Milepost

B2 Building Block Insurance is filed in the name of ***Select from drop-down*** and ***Select from drop-down***

Notify evidence of the required coverage, and duration to Enter one of the following: IBNSF; IDME; IETE; IELS; IPGR; ISOO; ISSAM; ITR; IUP; IWSOR; IWCL; IWGN then press F3

Also send a copy to the following: Enter one of the following: NW; NC; NE; SW; SE then press F3.

Include the following information on the insurance document:

- Project ID: Enter the PROJECT ID number
- Project Location: Enter the CITY & STATE
- Route Name: Enter the ROAD NAME and COUNTY NAME
- Crossing ID: Enter WisDOT CROSSING ID
- Railroad Subdivision: Enter the RAILROAD SUBDIVISION
- Railroad Milepost: Enter the RAILROAD MILEPOST
- Work Performed: Enter the WORK TO BE COMPLETED NEAR CROSSING

107-026 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

If multiple crossings delete the block above and utilize the table block below. If single crossing delete the table block below.

Enter T and press F3 (for multiple crossing otherwise delete)

IBNSF Building Block Daniel Peltier, Manager of Public Projects; 80 44th Avenue NE, Minneapolis, MN 55421; Telephone (763) 782-3495; E-mail daniel.peltier@bnsf.com to determine the applicable railroad rules and regulations. Once determined send the RPLI policy to ***Select from drop-down***. Approval of the policy will not take place until the Manager of Public Projects has been contacted.

IDME Building Block Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail: brian_osborne@cpr.ca

IETE Building Block Ryan Jonas, President, East Troy Railroad Museum; PO Box 943, East Troy, WI 53120; Telephone (414) 534-7175; E-mail ryan@easttroyrr.org.

IELS Building Block Tyler Delvaux, Director of Marketing/Customer Service; Customer Services Green Bay Operations, 529 S. Jefferson Street, Suite 108, Green Bay, WI 54305; Telephone (906) 786-0693; E-mail tyler.delvaux@elsrr.com.

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T Building Block- Project ID: Enter the PROJECT ID number

- Work Performed: Enter the WORK TO BE COMPLETED NEAR CROSSING

#	Route Name	City/County	Crossing ID	RR Subdivision	RR Milepost

B3 Building Block Insurance is filed in the name of ***Select from drop-down***.

Provide the second policy in the name of ***Select from drop-down***.

Notify evidence of the required coverage, and duration to Enter one of the following: IBNSF; IDME; IETE; IELS; IPGR; ISOO; ISSAM; ITR; IUP; IWSOR; IWCL; IWGN then press F3

Also send a copy to the following: Enter one of the following: NW; NC; NE; SW; SE then press F3.

Include the following information on the insurance document:

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NE Building Block Jared Kinziger, NE and NC Region Railroad Coordinator; 944 Vanderperren Way, Green Bay, WI 54304; Telephone (920) 492-7713; E-mail: jared.kinziger@dot.wi.gov.

SW Building Block ***Choose an item.***

SE Building Block Paul Derksen, SE Region Railroad Coordinator; 141 N. W. Barstow Street, Waukesha, WI 53188; Telephone (262) 548-8770; E-mail: paul.derksen@dot.wi.gov.

T Building Block- Project ID: Enter the PROJECT ID number

- Work Performed: Enter the WORK TO BE COMPLETED NEAR CROSSING

#	Route Name	City/County	Crossing ID	RR Subdivision	RR Milepost

F Building Block Approximately Enter the number of trains through freight trains operate ***Select from drop-down*** at up to Enter the speed of the trains mph. Enter sentence about switching movements

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

M Building Block

#	Passenger Train Volume	Passenger Train Speed	Freight Train Volume	Freight Train Speed	Frequency
					Select from drop-down
					Select from drop-down
					Select from drop-down

* Switch trains are in addition to freight and passenger trains.

BNSF Building Block **Construction Contact**

Daniel Peltier, Manager of Public Projects; 80 44th Avenue NE, Minneapolis, MN 55421; Telephone (763) 782-3495; E-mail daniel.peltier@bnsf.com for consultation on railroad requirements during construction.

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

Flagging Contact

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

Cable Locate Contact

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

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

DME Building Block **Construction Contact**

Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail brian_osborne@cpr.ca for consultation on railroad requirements during construction.

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

Flagging Contact

Matthew Miller, Supervisor of Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4556; E-mail matthew_miller@cpr.ca a minimum of 40 working days in advance to arrange for a railroad flagger. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

* Contact DM&E (CP) prior to letting for flagman work hour availability.

Cable Locate Contact

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

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

ELS Building Block Construction Contact

Tyler Delvaux, Director of Marketing/Customer Service; Customer Services Green Bay Operations, 529 S. Jefferson Street, Suite 108, Green Bay, WI 54305; Telephone (906) 786-0693; E-mail tyler.delvaux@elsrr.com for consultation on railroad requirements during construction.

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

Flagging Contact

Contact E&LS Headquarters, Well's office at Telephone (906) 399-0646; E-mail wells1@elsrr.com at least five working days before a flagger or cable locate is needed. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

Cable Locate

In addition to contacting Diggers Hotline, contact Matthew Hopkins, Signal Maintainer; Telephone (906) 399-0646; E-mail matthew.hopkins@elsrr.com at least five working days before the locate is needed. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

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

ETE Building Block Construction Contact

Ryan Jonas, President, East Troy Railroad Museum, Inc.; PO Box 943, East Troy, WI 53120; Telephone (414) 534-7175; E-mail ryan@easttroyrr.org for consultation on railroad requirements during construction.

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

Flagging Contact

See Construction Contact. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

Cable Locate Contact

Call "Diggers Hotline" to determine if fiber optic or other type of cable is buried in the general work location. This railroad does not have a Call Before You Dig number.

PGR Building Block Construction Contact

Nik Shepard, Director of Safety, Signals and Regulatory Compliance: 21778 Highview Avenue, Lakeview, MN 55044; Telephone (218) 324-2001; E-mail nshepard@progressiverail.com for consultation on railroad requirements during construction.

Leon Hoyt, Director of Maintenance of Way, 21778 Highview Avenue, Lakeview, MN 55044; (715) 563-4327; E-mail lhoyt@progressiverail.com

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

Flagging Contact

Contact Construction Contact above at least five working days before a flagger or cable locate is needed. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

Cable Locate Contact

In addition to contacting Diggers Hotline, contact Construction Contact above at least five working days before the locate is needed. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

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

SSAM Building Block Construction Contact

Jackie Macewicz, Manager Public Works; 3192 S. Pokegama Road, Superior, WI 54880; Telephone (715) 345-2503; E-mail jackie.macewicz@cn.ca for consultation on railroad requirements during construction.

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

Flagging Contact

Submit by US Mail a "Request for Flagging Services and Cable Location" form with prepayment to: Contact Flagging-US, 17641 South Ashland Avenue, Homewood, IL 60430; E-mail Flagging_US@CN.CA for flagging arrangements.

The form can be obtained at:

http://www.cn.ca/en/safety/employees/contractors-erailsafe/utility-installations

Requests for flagging and cable locates can take up to five business days after the railroad receives the paperwork. Reference the Wisconsin Milepost and Subdivision located in A.1. Advise Sault Ste. Marie Bridge Company (CN) that the flagging services are to be billed at the rate for a public highway project.

Cable Locate Contact

In addition to contacting Diggers Hotline, follow the procedure listed under Flagging Contact.

Sault Ste. Marie Bridge Company (CN) will only locate railroad owned facilities buried in the railroad right-of-way. The railroad does not locate any other utilities.

SOO Building Block Construction Contact

Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail brian_osborne@cpr.ca for consultation on railroad requirements during construction.

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

Flagging Contact

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

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

Cable Locate Contact

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

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

TR Building Block Construction Contact

Shaine Cowan, General Manager; Telephone (740) 610-1209; E-mail scowan@gwrr.com for consultation on railroad requirements during construction.

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

Flagging Contact

Jason Olsen, Roadmaster, PO Box 130, 17 South Marinette Street, Tomahawk, WI 54487; Telephone (715) 612-2101; E-mail jolsen@gwrr.com. Reference the Wisconsin Milepost and Subdivision located in A.1.

Cable Locate Contact

Call "Diggers Hotline" to determine if fiber optic or other type of cable is buried in the general work location. This railroad does not have a Call Before You Dig number.

UP Building Block Construction Contact

Chris T. Keckeisen, Manager Special Projects - Industry & Public Projects Engineering Department; 1400 Douglas, MS 0910, Omaha, NE, 68179; Telephone (402) 5445131; E-mail ctkeckei@up.com or Richard Ellison, Project coordinator, 207 Powell Avenue, Labadie, MO, 63055; Telephone (847) 323-7197; E-mail richardellison@up.com for consultation on railroad requirements during construction.

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

Flagging Contact

See Construction Contact. If more than 30 days of flagging is required contact UP 30 days prior to needing a flagger on site. Reference the Wisconsin Milepost and Subdivision located in A.1.

Cable Locate Contact

In addition to contacting Diggers Hotline, contact the UP Call Before You Dig line at (800) 336-9193 at least five working days before the locate is needed. Normal business hours are 6:30 AM to 6:30 PM, Central Time, Monday through Friday, except holidays and are subject to change. Calls will be routed at all times in case of an emergency. Reference the Wisconsin Milepost and Subdivision located in A.1.

UP will only locate railroad owned cable buried in the railroad right-of-way. The railroad does not locate any other utilities.

WSOR Building Block Construction Contact

Roger Schaalma, Superintendent of Maintenance of Way, Wisconsin and Southern Railroad Co.; 1890 East Johnson Street, Madison, WI 53704; Telephone (608) 620-2044; E-mail rschaalma@watcocompanies.com for consultation on railroad requirements during construction.

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

Flagging Contact

See Construction Contact. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

Cable Locate Contact

In addition to contacting Diggers Hotline, contact Amanda Haggerty, Office Administrator; Telephone (608) 620-2048; E-mail ahaggerty@watcocompanies.com at least five working days before the locate is needed. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

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

WCL Building Block **Construction Contact**

Jackie Macewicz, Manager Public Works; 3192 S. Pokegama Road, Superior, WI 54880; Telephone (715) 345-2503; E-mail jackie.macewicz@cn.ca for consultation on railroad requirements during construction.

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

Flagging Contact

Submit by US Mail a "Request for Flagging Services and Cable Location" form with prepayment to: Flagging-US, 17641 South Ashland Avenue, Homewood, IL 60430; Flagging_US@CN.CA . The form can be obtained at:

http://www.cn.ca/en/safety/employees/contractors-erailsafe/utility-installations

Requests for flagging and cable locates can take up to five business days after the railroad receives the paperwork. Reference the Wisconsin Milepost and Subdivision located in A.1. Advise Wisconsin Central Ltd (CN) that the flagging services are to be billed at the rate for a public highway project.

Cable Locate Contact

In addition to contacting Diggers Hotline, follow the procedure listed under Flagging Contact.

Wisconsin Central Ltd (CN) will only locate railroad owned facilities buried in the railroad right-of-way. The railroad does not locate any other utilities.

WGN Building Block **Construction Contact**

Greg Vreeland, General Manager; PO Box 46, Spooner, WI 54801; Telephone (715) 635-3200; E-mail greg@spoonertrainrifde.com for consultation on railroad requirements during construction.

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

Flagging Contact

See Construction Contact. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

Cable Locate Contact

Call "Diggers Hotline" to determine if fiber optic or other type of cable is buried in the general work location. This railroad does not have a Call Before You Dig number.

C1 Building Block If a temporary grade crossing is desired, submit a written request to the railroad representative named in A.3 at least 40 days prior to the time needed. Approval is subject to the discretion of the railroad. The department has made no arrangements for a temporary grade crossing.

C2 Building Block The department has made arrangements for a temporary grade crossing to be installed by the railroad at a location deemed appropriate for both contractor needs and railroad requirements. Contact the railroad representative named in A.3 at least 40 days prior to the time it is desired to have the crossing installed.

SCN Building Block All employees of contractors who work on CN properties are required to have minimum CN Safety and Security Awareness training. This training can be obtained by

registering and following the CN link through www.contractororientation.com. This training is good for a period of one year.

a. Exception: CN has exempted from this training those it classifies as "Delivery Persons". Delivery Persons include contractors such as UPS, FedEx, trucking companies, etc. who merely access the property to supply materials or equipment.

The security awareness and contractor orientation certification must be renewed for projects that will carry over beyond the one-year period. Contractor and subcontractor employees shall wear the identification badge issued by www.contractororientation.com when on railroad right-of-way. Costs associated with training and registration are incidental to other items in the contract.

If employees of contractors have a current eRailSafe badge for CN then an additional badge is not required from www.contractororientation.com.

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

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

107-034 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use STSP 107-034 on projects that require more extensive flagging. Use STSP 107-026 on projects that require less extensive flagging. Refer to FDM Procedure 19-15-35 for guidance on which railroad STSP to use. Refer to FDM Procedure 17-50-5 for guidance on insurance requirements. Confirm with the Region Railroad Coordinator.

- ***Use Section A.6 for BNSF or UP or if horizontal or vertical clearances are to be different than standard spec 107.17.1; requires prior coordination with the railroad. Otherwise delete A.6.***
- ***Unless authorized by the Railroads & Harbors Section, do not use Section D, Rail Security Awareness and Contractor Orientation. If needed use SCN for WCL/SSAM, use ERAIL for all other railroads.***
- ***Provide a separate railroad STSP (107-026 or 107-034) for each railroad company that owns property or tracks within the project limits; or, in the case of the state-owned railroad system, holds the operating agreement for the track.***

16. stp-107-034 Railroad Insurance and Coordination - *Select from drop-down*.

A. Description

Comply with standard spec 107.17 for all work affecting ***Select from drop-down*** property and any existing tracks.

A.1 Railroad Insurance Requirements

In addition to standard spec 107.26, provide railroad protective liability insurance coverage as specified in standard spec 107.17.3. Enter B1, B2 or B3 and press F3

A.2 Train Operation

Enter one of the following: F (Freight only), P (Passenger & Freight present) or M (for Multiple Crossings) then press F3

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

Enter one of the following: BNSF; DME; ELS; ETE; PGR; SSAM; SOO; TR; UP; WSOR; WCL; WGN then press F3

A.4 Work by Railroad

The railroad will perform the work described in this section, except for work described in other special provisions and will be accomplished without cost to the contractor. Enter a description of the work or write "None"

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

A.5 Temporary Grade Crossing

Enter C1 or C2 and press F3

A.6 Temporary Clearances During Construction

Enter TEMP if BNSF or UP and press F3 (otherwise delete A.6)

B Railroad Flagging

Arrange with the railroad for the flagging of trains and safety of railroad operations if clearances specified in subsection 107.17.1 are not maintained during construction operations. At any other time in railroad representative's judgment, the contractor's work or operations constitute an intrusion into the track zone and create an extraordinary hazard to railroad traffic, and at any other time when flagging protection is necessary for safety to comply with the operating rules of the railroad.

Projects with concurrent activity may require more than one flagger.

Projects with heavy contractor activity within 25 feet of the centerline of any track or unusual or heavy impact on railroad facilities will normally require a full-time flagger.

The department and railroad will monitor operations for compliance with the above flagging requirements. Violations may result in removal from railroad property until arrangements to adhere to the flagging requirements are satisfied. If the railroad imposes additional flagging requirements beyond the above flagging requirements due to the previous violations, the contractor shall bear all costs of the additional flagging requirements.

C Flagging by Railroad– Railroad Does Not Pay Flagging Costs

C.1 General

Replace paragraph (1,3 and 4) of standard spec 107.17.1 with the following:

(1) Coordinate with the railroad for all work performed within 25 feet of the track centerline including equipment or extensions of equipment that can fall within 25 feet of the track centerline or adjacent facilities or when working on railroad right-of-way. Include the following on all submittals and other written communications with the railroad:

- WisDOT crossing number.
- Railroad milepost.
- Railroad subdivision.

(3) Perform all work within 25 feet of the track centerline including equipment or extensions of equipment that can fall within 25 feet of the track centerline or adjacent facilities or when working on railroad right-of-way in a way that does not interfere with the safe and uninterrupted operation of railroad traffic. Maintain clearances during construction as follows:

1. Do not operate equipment closer than 25 feet horizontally from a track centerline or 22 feet vertically above the top of a rail, except under the protection of railroad flaggers.
2. Do not store materials or equipment closer than 25 feet horizontally from a track centerline.
3. Provide an obstruction-free work zone adjacent to a track extending 12 feet or more horizontally on both sides of the track centerline. Keep this work zone free of construction debris.
4. Unless the railroad's chief engineering officer approves otherwise in writing, maintain minimum clearances from falsework, forms, shoring, and other temporary fixed objects as follows:
   - 4.1 Provide 12 feet, plus 1.5 inches per degree of track curvature, measured horizontally from the track centerline.
   - 4.2 Provide 21 feet, plus compensation for super-elevated track, measured vertically above the top of the highest rail.

(4) Comply with the railroad's rules and regulations when work is within 25 feet of the track centerline including equipment or extensions of equipment that can fall within 25 feet of the track centerline or adjacent facilities or when working on railroad right-of-way. If the railroad's chief engineering officer requires, arrange with the railroad to obtain the services of qualified railroad employees to protect railroad traffic through the work area. Bear the cost of these services and make payment directly to the railroad. Notify the appropriate railroad representative as listed in section A.3 above, in writing, at least 40 business days before starting work near a track. Provide the specific time planned to start the operations.

Enter FBNSF; FDME; FPGR; FSOO; FSSAM; FUP; FWSOR; FWCL; FOTHER and press F3

C.3 Reimbursement Provisions

The actual cost for flagging will be billed by the railroad. After the completion of the work requiring flagging protection as provided in section B above, the department will reimburse 50% of the cost of such services up to the rates provided above based on paid railroad invoices, except for the excluded conditions enumerated below. In the event actual flagging rates exceed the rates stated above, the department will reimburse 100% of the portion of the rate that is greater than the rates stated above.

C.4 Excluded Conditions

The department will not reimburse any of the cost for additional flagging attributable to the following:

1. Additional flagging requirements imposed by the railroad beyond the flagging requirements provided in subsection B above due to violations by the contractor.
2. Temporary construction crossings arranged for by the contractor.

The contractor shall bear all costs of the additional flagging requirements for the excluded conditions.

C.5 Payment for Flagging

The department will pay for the department's portion of flagging reimbursement as specified in section C of this provision under the following item:

ITEM NUMBER	DESCRIPTION	UNIT
801.0117	Railroad Flagging Reimbursement	DOL

The reimbursement payment, as shown on the Schedule of Items, is solely for department accounting purposes. Actual flagging costs will vary based on the contractor's means and methods.

Railroads may issue progressive invoices. Notify the railroad when the work is completed and request a final invoice from the railroad. Promptly pay railroad-flagging invoices, less any charges that may be in dispute. The department will withhold flagging reimbursement until any disputed charges are resolved and the final invoice is paid. No reimbursement for flagging will be made by the department if a violation of subsection B is documented.

D Rail Security Awareness and Contractor Orientation

Enter SCN or ERAIL then press F3

stp-107-034 (20200629)

B1 Building Block Insurance is filed in the name of ***Select from drop-down***.

Notify evidence of the required coverage, and duration to Enter one of the following: IBNSF; IDME; IETE; IELS; IPGR; ISOO; ISSAM; ITR; IUP; IWSOR; IWCL; IWGN then press F3

Also send a copy to the following: Enter one of the following: NW; NC; NE; SW; SE then press F3

Include the following information on the insurance document:

- Project ID: Enter the PROJECT ID number
- Project Location: Enter the CITY & STATE
- Route Name: Enter the ROAD NAME and COUNTY NAME
- Crossing ID: Enter WisDOT CROSSING ID
- Railroad Subdivision: Enter the RAILROAD SUBDIVISION
- Railroad Milepost: Enter the RAILROAD MILEPOST
- Work Performed: Enter the WORK TO BE COMPLETED NEAR CROSSING

107-026 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

If multiple crossings delete the block above and utilize the table block below. If single crossing delete the table block below.

Enter T and press F3 (for multiple crossing otherwise delete)

IBNSF Building Block Daniel Peltier, Manager of Public Projects; 80 44th Avenue NE, Minneapolis, MN 55421; Telephone (763) 782-3495; E-mail daniel.peltier@bnsf.com to determine the applicable railroad rules and regulations. Once determined send the RPLI policy to ***Select from drop-down***. Approval of the policy will not take place until the Manager of Public Projects has been contacted.

IDME Building Block Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail: brian_osborne@cpr.ca

IETE Building Block Ryan Jonas, President, East Troy Railroad Museum; PO Box 943, East Troy, WI 53120; Telephone (414) 534-7175; E-mail ryan@easttroyrr.org.

IELS Building Block Tyler Delvaux, Director of Marketing/Customer Service; Customer Services Green Bay Operations, 529 S. Jefferson Street, Suite 108, Green Bay, WI 54305; Telephone (906) 786-0693; E-mail tyler.delvaux@elsrr.com.

IPGR Building Block Nik Shepard, Director of Crossings, Signals & Right of Way: 21778 Highview Avenue, Lakeview, MN 55044; Telephone (218) 324-2001; E-mail nshepard@progressiverail.com.

ISOO Building Block Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail: brian_osborne@cpr.ca

ISSAM Building Block Jackie Macewicz, Manager Public Works; 3912 S. Pokegama Road, Superior, WI 54880; Telephone (715) 345-2503; E-mail: Jackie.macewicz@cn.ca.

ITR Building Block Daniel Rickel, General Manager; PO Box 130, 17 South Marinette Street, Tomahawk, WI 54487; Telephone (715) 453-2303; E-mail: daniel.rickel@gwrr.com.

IUP Building Block David C. LaPlante, Senior Manager-Real Estate-Special and Public Projects, 1400 Douglas St. STOP 1690, Omaha, NE 68179; Telephone: (402) 544-8563; E-mail: dclaplante@up.com.

IWSOR Building Block Amanda Haggerty, Office Administrator; 1890 E Johnson Street, Madison, WI 53704; Telephone (608) 620-2048; E-mail: ahaggerty@watcocompanies.com.

IWCL Building Block Jackie Macewicz, Manager Public Works; 3912 S. Pokegama Road, Superior, WI 54880; Telephone (715) 345-2503; E-mail: Jackie.macewicz@cn.ca.

IWGN Building Block Greg Vreeland, General Manager; PO Box 46, Spooner, WI 54801; Telephone (715) 635-3200; E-mail greg@spoonertrainrifde.com.

NW Building Block Anna Davey, NW and NC Region Railroad Coordinator; 1701 N 4th Street, Superior, WI 54880; Telephone (715) 392-7960; E-mail: anna.davey@dot.wi.gov.

NC Building Block ***Choose an item.***

NE Building Block Jared Kinziger, NE and NC Region Railroad Coordinator; 944 Vanderperren Way, Green Bay, WI 54304; Telephone (920) 492-7713; E-mail: jared.kinziger@dot.wi.gov.

SW Building Block ***Choose an item.***

SE Building Block Paul Derksen, SE Region Railroad Coordinator; 141 N. W. Barstow Street, Waukesha, WI 53188; Telephone (262) 548-8770; E-mail: paul.derksen@dot.wi.gov.

T Building Block- Project ID: Enter the PROJECT ID number

- Work Performed: Enter the WORK TO BE COMPLETED NEAR CROSSING

#	Route Name	City/County	Crossing ID	RR Subdivision	RR Milepost

B2 Building Block Insurance is filed in the name of ***Select from drop-down*** and ***Select from drop-down***

Notify evidence of the required coverage, and duration to Enter one of the following: IBNSF; IDME; IETE; IELS; IPGR; ISOO; ISSAM; ITR; IUP; IWSOR; IWCL; IWGN then press F3

Also send a copy to the following: Enter one of the following: NW; NC; NE; SW; SE then press F3.

Include the following information on the insurance document:

- Project ID: Enter the PROJECT ID number
- Project Location: Enter the CITY & STATE
- Route Name: Enter the ROAD NAME and COUNTY NAME
- Crossing ID: Enter WisDOT CROSSING ID
- Railroad Subdivision: Enter the RAILROAD SUBDIVISION
- Railroad Milepost: Enter the RAILROAD MILEPOST
- Work Performed: Enter the WORK TO BE COMPLETED NEAR CROSSING

107-026 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

If multiple crossings delete the block above and utilize the table block below. If single crossing delete the table block below.

Enter T and press F3 (for multiple crossing otherwise delete)

IBNSF Building Block Daniel Peltier, Manager of Public Projects; 80 44th Avenue NE, Minneapolis, MN 55421; Telephone (763) 782-3495; E-mail daniel.peltier@bnsf.com to determine the applicable railroad rules and regulations. Once determined send the RPLI policy to ***Select from drop-down***. Approval of the policy will not take place until the Manager of Public Projects has been contacted.

IDME Building Block Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail: brian_osborne@cpr.ca

IETE Building Block Ryan Jonas, President, East Troy Railroad Museum; PO Box 943, East Troy, WI 53120; Telephone (414) 534-7175; E-mail ryan@easttroyrr.org.

IELS Building Block Tyler Delvaux, Director of Marketing/Customer Service; Customer Services Green Bay Operations, 529 S. Jefferson Street, Suite 108, Green Bay, WI 54305; Telephone (906) 786-0693; E-mail tyler.delvaux@elsrr.com.

IPGR Building Block Nik Shepard, Director of Crossings, Signals & Right of Way: 21778 Highview Avenue, Lakeview, MN 55044; Telephone (218) 324-2001; E-mail nshepard@progressiverail.com.

ISOO Building Block Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail: brian_osborne@cpr.ca

ISSAM Building Block Jackie Macewicz, Manager Public Works; 3912 S. Pokegama Road, Superior, WI 54880; Telephone (715) 345-2503; E-mail: Jackie.macewicz@cn.ca.

ITR Building Block Daniel Rickel, General Manager; PO Box 130, 17 South Marinette Street, Tomahawk, WI 54487; Telephone (715) 453-2303; E-mail: daniel.rickel@gwrr.com.

IUP Building Block David C. LaPlante, Senior Manager-Real Estate-Special and Public Projects, 1400 Douglas St. STOP 1690, Omaha, NE 68179; Telephone: (402) 544-8563; E-mail: dclaplante@up.com.

IWSOR Building Block Amanda Haggerty, Office Administrator; 1890 E Johnson Street, Madison, WI 53704; Telephone (608) 620-2048; E-mail: ahaggerty@watcocompanies.com.

IWCL Building Block Jackie Macewicz, Manager Public Works; 3912 S. Pokegama Road, Superior, WI 54880; Telephone (715) 345-2503; E-mail: Jackie.macewicz@cn.ca.

IWGN Building Block Greg Vreeland, General Manager; PO Box 46, Spooner, WI 54801; Telephone (715) 635-3200; E-mail greg@spoonertrainrifde.com.

NW Building Block Anna Davey, NW and NC Region Railroad Coordinator; 1701 N 4th Street, Superior, WI 54880; Telephone (715) 392-7960; E-mail: anna.davey@dot.wi.gov.

NC Building Block ***Choose an item.***

NE Building Block Jared Kinziger, NE and NC Region Railroad Coordinator; 944 Vanderperren Way, Green Bay, WI 54304; Telephone (920) 492-7713; E-mail: jared.kinziger@dot.wi.gov.

SW Building Block ***Choose an item.***

SE Building Block Paul Derksen, SE Region Railroad Coordinator; 141 N. W. Barstow Street, Waukesha, WI 53188; Telephone (262) 548-8770; E-mail: paul.derksen@dot.wi.gov.

T Building Block- Project ID: Enter the PROJECT ID number

- Work Performed: Enter the WORK TO BE COMPLETED NEAR CROSSING

#	Route Name	City/County	Crossing ID	RR Subdivision	RR Milepost

B3 Building Block Insurance is filed in the name of ***Select from drop-down***.

Provide the second policy in the name of ***Select from drop-down***.

Notify evidence of the required coverage, and duration to Enter one of the following: IBNSF; IDME; IETE; IELS; IPGR; ISOO; ISSAM; ITR; IUP; IWSOR; IWCL; IWGN then press F3

Also send a copy to the following: Enter one of the following: NW; NC; NE; SW; SE then press F3.

Include the following information on the insurance document:

- Project ID: Enter the PROJECT ID number
- Project Location: Enter the CITY & STATE
- Route Name: Enter the ROAD NAME and COUNTY NAME
- Crossing ID: Enter WisDOT CROSSING ID
- Railroad Subdivision: Enter the RAILROAD SUBDIVISION
- Railroad Milepost: Enter the RAILROAD MILEPOST
- Work Performed: Enter the WORK TO BE COMPLETED NEAR CROSSING

107-026 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

If multiple crossings delete the block above and utilize the table block below. If single crossing delete the table block below.

Enter T and press F3 (for multiple crossing otherwise delete)

IBNSF Building Block Daniel Peltier, Manager of Public Projects; 80 44th Avenue NE, Minneapolis, MN 55421; Telephone (763) 782-3495; E-mail daniel.peltier@bnsf.com to determine the applicable railroad rules and regulations. Once determined send the RPLI policy to ***Select from drop-down***. Approval of the policy will not take place until the Manager of Public Projects has been contacted.

IDME Building Block Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail: brian_osborne@cpr.ca

IETE Building Block Ryan Jonas, President, East Troy Railroad Museum; PO Box 943, East Troy, WI 53120; Telephone (414) 534-7175; E-mail ryan@easttroyrr.org.

IELS Building Block Tyler Delvaux, Director of Marketing/Customer Service; Customer Services Green Bay Operations, 529 S. Jefferson Street, Suite 108, Green Bay, WI 54305; Telephone (906) 786-0693; E-mail tyler.delvaux@elsrr.com.

IPGR Building Block Nik Shepard, Director of Crossings, Signals & Right of Way: 21778 Highview Avenue, Lakeview, MN 55044; Telephone (218) 324-2001; E-mail nshepard@progressiverail.com.

ISOO Building Block Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail: brian_osborne@cpr.ca

ISSAM Building Block Jackie Macewicz, Manager Public Works; 3912 S. Pokegama Road, Superior, WI 54880; Telephone (715) 345-2503; E-mail: Jackie.macewicz@cn.ca.

ITR Building Block Daniel Rickel, General Manager; PO Box 130, 17 South Marinette Street, Tomahawk, WI 54487; Telephone (715) 453-2303; E-mail: daniel.rickel@gwrr.com.

IUP Building Block David C. LaPlante, Senior Manager-Real Estate-Special and Public Projects, 1400 Douglas St. STOP 1690, Omaha, NE 68179; Telephone: (402) 544-8563; E-mail: dclaplante@up.com.

IWSOR Building Block Amanda Haggerty, Office Administrator; 1890 E Johnson Street, Madison, WI 53704; Telephone (608) 620-2048; E-mail: ahaggerty@watcocompanies.com.

IWCL Building Block Jackie Macewicz, Manager Public Works; 3912 S. Pokegama Road, Superior, WI 54880; Telephone (715) 345-2503; E-mail: Jackie.macewicz@cn.ca.

IWGN Building Block Greg Vreeland, General Manager; PO Box 46, Spooner, WI 54801; Telephone (715) 635-3200; E-mail greg@spoonertrainrifde.com.

NW Building Block Anna Davey, NW and NC Region Railroad Coordinator; 1701 N 4th Street, Superior, WI 54880; Telephone (715) 392-7960; E-mail: anna.davey@dot.wi.gov.

NC Building Block ***Choose an item.***

NE Building Block Jared Kinziger, NE and NC Region Railroad Coordinator; 944 Vanderperren Way, Green Bay, WI 54304; Telephone (920) 492-7713; E-mail: jared.kinziger@dot.wi.gov.

SW Building Block ***Choose an item.***

SE Building Block Paul Derksen, SE Region Railroad Coordinator; 141 N. W. Barstow Street, Waukesha, WI 53188; Telephone (262) 548-8770; E-mail: paul.derksen@dot.wi.gov.

T Building Block- Project ID: Enter the PROJECT ID number

- Work Performed: Enter the WORK TO BE COMPLETED NEAR CROSSING

#	Route Name	City/County	Crossing ID	RR Subdivision	RR Milepost

F Building Block Approximately Enter the number of trains through freight trains operate ***Select from drop-down*** at up to Enter the speed of the trains mph. Enter sentence about switching movements

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

M Building Block

#	Passenger Train Volume	Passenger Train Speed	Freight Train Volume	Freight Train Speed	Frequency	
					Select from drop-down	
					Select from drop-down	
					Select from drop-down	

* Switch trains are in addition to freight and passenger trains.

BNSF Building Block Construction Contact

Daniel Peltier, Manager of Public Projects; 80 44th Avenue NE, Minneapolis, MN 55421; Telephone (763) 782-3495; E-mail daniel.peltier@bnsf.com for consultation on railroad requirements during construction.

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

Flagging Contact

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

Cable Locate Contact

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

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

DME Building Block Construction Contact

Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail brian_osborne@cpr.ca for consultation on railroad requirements during construction.

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

Flagging Contact

Matthew Miller, Supervisor of Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4556; E-mail matthew_miller@cpr.ca a minimum of 40 working days in advance to arrange for a railroad flagger. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

* Contact DM&E (CP) prior to letting for flagman work hour availability.

Cable Locate Contact

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

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

ELS Building Block Construction Contact

Tyler Delvaux, Director of Marketing/Customer Service; Customer Services Green Bay Operations, 529 S. Jefferson Street, Suite 108, Green Bay, WI 54305; Telephone (906) 786-0693; E-mail tyler.delvaux@elsrr.com for consultation on railroad requirements during construction.

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

Flagging Contact

Contact E&LS Headquarters, Well's office at Telephone (906) 399-0646; E-mail wells1@elsrr.com at least five working days before a flagger or cable locate is needed. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

Cable Locate

In addition to contacting Diggers Hotline, contact Matthew Hopkins, Signal Maintainer; Telephone (906) 399-0646; E-mail matthew.hopkins@elsrr.com at least five working days before the locate is needed. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

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

ETE Building Block Construction Contact

Ryan Jonas, President, East Troy Railroad Museum, Inc.; PO Box 943, East Troy, WI 53120; Telephone (414) 534-7175; E-mail ryan@easttroyrr.org for consultation on railroad requirements during construction.

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

Flagging Contact

See Construction Contact. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

Cable Locate Contact

Call "Diggers Hotline" to determine if fiber optic or other type of cable is buried in the general work location. This railroad does not have a Call Before You Dig number.

PGR Building Block Construction Contact

Nik Shepard, Director of Safety, Signals and Regulatory Compliance: 21778 Highview Avenue, Lakeview, MN 55044; Telephone (218) 324-2001; E-mail nshepard@progressiverail.com for consultation on railroad requirements during construction.

Leon Hoyt, Director of Maintenance of Way, 21778 Highview Avenue, Lakeview, MN 55044; (715) 563-4327; E-mail lhoyt@progressiverail.com

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

Flagging Contact

Contact Construction Contact above at least five working days before a flagger or cable locate is needed. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

Cable Locate Contact

In addition to contacting Diggers Hotline, contact Construction Contact above at least five working days before the locate is needed. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

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

SSAM Building Block Construction Contact

Jackie Macewicz, Manager Public Works; 3192 S. Pokegama Road, Superior, WI 54880; Telephone (715) 345-2503; E-mail jackie.macewicz@cn.ca for consultation on railroad requirements during construction.

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

Flagging Contact

Submit by US Mail a "Request for Flagging Services and Cable Location" form with prepayment to: Contact Flagging-US, 17641 South Ashland Avenue, Homewood, IL 60430; E-mail Flagging_US@CN.CA for flagging arrangements.

The form can be obtained at:

http://www.cn.ca/en/safety/employees/contractors-erailsafe/utility-installations

Requests for flagging and cable locates can take up to five business days after the railroad receives the paperwork. Reference the Wisconsin Milepost and Subdivision located in A.1. Advise Sault Ste. Marie Bridge Company (CN) that the flagging services are to be billed at the rate for a public highway project.

Cable Locate Contact

In addition to contacting Diggers Hotline, follow the procedure listed under Flagging Contact.

Sault Ste. Marie Bridge Company (CN) will only locate railroad owned facilities buried in the railroad right-of-way. The railroad does not locate any other utilities.

SOO Building Block Construction Contact

Brian Osborne, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail brian_osborne@cpr.ca for consultation on railroad requirements during construction.

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

Flagging Contact

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

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

Cable Locate Contact

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

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

TR Building Block Construction Contact

Shaine Cowan, General Manager; Telephone (740) 610-1209; E-mail scowan@gwrr.com for consultation on railroad requirements during construction.

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

Flagging Contact

Jason Olsen, Roadmaster, PO Box 130, 17 South Marinette Street, Tomahawk, WI 54487; Telephone (715) 612-2101; E-mail jolsen@gwrr.com. Reference the Wisconsin Milepost and Subdivision located in A.1.

Cable Locate Contact

Call "Diggers Hotline" to determine if fiber optic or other type of cable is buried in the general work location. This railroad does not have a Call Before You Dig number.

UP Building Block Construction Contact

Chris T. Keckeisen, Manager Special Projects - Industry & Public Projects Engineering Department; 1400 Douglas, MS 0910, Omaha, NE, 68179; Telephone (402) 5445131; E-mail ctkeckei@up.com or Richard Ellison, Project coordinator, 207 Powell Avenue, Labadie, MO, 63055; Telephone (847) 323-7197; E-mail richardellison@up.com for consultation on railroad requirements during construction.

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

Flagging Contact

See Construction Contact. If more than 30 days of flagging is required contact UP 30 days prior to needing a flagger on site. Reference the Wisconsin Milepost and Subdivision located in A.1.

Cable Locate Contact

In addition to contacting Diggers Hotline, contact the UP Call Before You Dig line at (800) 336-9193 at least five working days before the locate is needed. Normal business hours are 6:30 AM to 6:30 PM, Central Time, Monday through Friday, except holidays and are subject to change. Calls will be routed at all times in case of an emergency. Reference the Wisconsin Milepost and Subdivision located in A.1.

UP will only locate railroad owned cable buried in the railroad right-of-way. The railroad does not locate any other utilities.

WSOR Building Block Construction Contact

Roger Schaalma, Superintendent of Maintenance of Way, Wisconsin and Southern Railroad Co.; 1890 East Johnson Street, Madison, WI 53704; Telephone (608) 620-2044; E-mail rschaalma@watcocompanies.com for consultation on railroad requirements during construction.

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

Flagging Contact

See Construction Contact. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

Cable Locate Contact

In addition to contacting Diggers Hotline, contact Amanda Haggerty, Office Administrator; Telephone (608) 620-2048; E-mail ahaggerty@watcocompanies.com at least five working days before the locate is needed. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

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

WCL Building Block Construction Contact

Jackie Macewicz, Manager Public Works; 3192 S. Pokegama Road, Superior, WI 54880; Telephone (715) 345-2503; E-mail jackie.macewicz@cn.ca for consultation on railroad requirements during construction.

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

Flagging Contact

Submit by US Mail a "Request for Flagging Services and Cable Location" form with prepayment to: Flagging-US, 17641 South Ashland Avenue, Homewood, IL 60430; Flagging_US@CN.CA . The form can be obtained at:

http://www.cn.ca/en/safety/employees/contractors-erailsafe/utility-installations

Requests for flagging and cable locates can take up to five business days after the railroad receives the paperwork. Reference the Wisconsin Milepost and Subdivision located in A.1. Advise Wisconsin Central Ltd (CN) that the flagging services are to be billed at the rate for a public highway project.

Cable Locate Contact

In addition to contacting Diggers Hotline, follow the procedure listed under Flagging Contact.

Wisconsin Central Ltd (CN) will only locate railroad owned facilities buried in the railroad right-of-way. The railroad does not locate any other utilities.

WGN Building Block **Construction Contact**

Greg Vreeland, General Manager; PO Box 46, Spooner, WI 54801; Telephone (715) 635-3200; E-mail greg@spoonertrainrifde.com for consultation on railroad requirements during construction.

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

Flagging Contact

See Construction Contact. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

Cable Locate Contact

Call "Diggers Hotline" to determine if fiber optic or other type of cable is buried in the general work location. This railroad does not have a Call Before You Dig number.

C1 Building Block If a temporary grade crossing is desired, submit a written request to the railroad representative named in A.3 at least 40 days prior to the time needed. Approval is subject to the discretion of the railroad. The department has made no arrangements for a temporary grade crossing.

C2 Building Block The department has made arrangements for a temporary grade crossing to be installed by the railroad at a location deemed appropriate for both contractor needs and railroad requirements. Contact the railroad representative named in A.3 at least 40 days prior to the time it is desired to have the crossing installed.

TEMP Building Block *Replace standard spec 107.17.1(3) items 4.1 and 4.2 with the following:*

4.1 Provide 15 feet 0 inches plus 1.5 inches per degree of track curvature, measured horizontally from the track center line.

4.2 Provide 21 feet 6 inch measured vertically above the top of the highest rail.

BNSF Building Block **Construction Contact**

Daniel Peltier, Manager of Public Projects; 80 44th Avenue NE, Minneapolis, MN 55421; Telephone (763) 782-3495; E-mail daniel.peltier@bnsf.com for consultation on railroad requirements during construction.

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

Flagging Contact

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

Cable Locate Contact

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

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

UP Building Block Construction Contact

Chris T. Keckeisen, Manager Special Projects - Industry & Public Projects Engineering Department; 1400 Douglas, MS 0910, Omaha, NE, 68179; Telephone (402) 5445131; E-mail ctkeckei@up.com or Richard Ellison, Project coordinator, 207 Powell Avenue, Labadie, MO, 63055; Telephone (847) 323-7197; E-mail richardellison@up.com for consultation on railroad requirements during construction.

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

Flagging Contact

See Construction Contact. If more than 30 days of flagging is required contact UP 30 days prior to needing a flagger on site. Reference the Wisconsin Milepost and Subdivision located in A.1.

Cable Locate Contact

In addition to contacting Diggers Hotline, contact the UP Call Before You Dig line at (800) 336-9193 at least five working days before the locate is needed. Normal business hours are 6:30 AM to 6:30 PM, Central Time, Monday through Friday, except holidays and are subject to change. Calls will be routed at all times in case of an emergency. Reference the Wisconsin Milepost and Subdivision located in A.1.

UP will only locate railroad owned cable buried in the railroad right-of-way. The railroad does not locate any other utilities.

FBNSF Building Block C.2 Rates - BNSF

The following rates, reimbursement provisions, and excluded conditions will be used to determine the contractor's cost of flagging:

- $1,300 daily rate for an eight-hour day (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),
- $1,800 "Rest Time" or nightly rate for weekday overnight work for an eight-hour day (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),
- $1,800 daily rate for an eight-hour day on Saturdays, Sundays or holidays (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),
- $2,000 "Rest Time" or nightly rate for weekend overnight work for an eight-hour day (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),
- $200 per hour overtime rate for all time worked before or after the regular assigned eight hours on any day, or for a minimum three hour call on Saturdays, Sundays, or Holidays.

The flagger is required to set flags each day in advance of the contractor commencing work that will require flagging. The flagger must also remove the flags each day after the completion of work that required flagging. Any time worked before or after the minimum eight-hour flagging day to set or remove flags will be billed at the overtime rate. The contractor is responsible for knowing the requirements of the railroad for arranging and terminating flagging services and for the associated costs of those services.

FDME Building Block C.2 Rates - DM&E (CP)

The following rates, reimbursement provisions, and excluded conditions will be used to determine the contractor's cost of flagging:

- $1,200 daily rate for an eight-hour day (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),
- $1,500 daily rate for an eight-hour day on Saturdays, Sundays or holidays (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),

- $151 per hour overtime rate for all time worked before or after the regular assigned eight hours on any day, or for a minimum three hour call on Saturdays, Sundays, or Holidays.

  If a flagger must be relieved due to hours of service requirements, arrangements will be made for a relief flagger.

  The flagger is required to set flags each day in advance of the contractor commencing work that will require flagging. The flagger must also remove the flags each day after the completion of work that required flagging. Any time worked before or after the minimum eight-hour flagging day to set or remove flags will be billed at the overtime rate. The contractor is responsible for knowing the requirements of the railroad for arranging and terminating flagging services and for the associated costs of those services.

FPGR Building Block **C.2 Rates - Progressive Rail**

The following rates, reimbursement provisions, and excluded conditions will be used to determine the contractor's cost of flagging:

- $500 daily rate per day (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses for hours between 7:30 am – 3:30 pm M-F)
- $1000 "Rest Time" or nightly rate for weekday overnight work for an eight-hour day (including wages, labor surcharges, lodging, vehicle and mileage expenses)
- $1,000 daily rate for an eight-hour day on Saturdays, Sundays, or holidays (including wages, labor surcharges, lodging, vehicle and mileage expenses)
- $1,000 "Rest Time" or nightly rate for weekend overnight work for an eight-hour day (including wages, labor surcharges, lodging, vehicle and mileage expenses)
- $150 per hour overtime rate for all time worked before or after the regular assigned eight hours on any day, or for a minimum three hour call on Saturdays, Sundays, or Holidays.

  The flagger is required to set flags each day in advance of the contractor commencing work that will require flagging. The flagger must also remove the flags each day after the completion of work that required flagging. Any time worked before or after the minimum eight-hour flagging day to set or remove flags will be billed at the overtime rate. The contractor is responsible for knowing the requirements of the railroad for arranging and terminating flagging services and for the associated costs of those services.

  Advise Progressive Rail that the flagging services are to be billed at the rate for a public highway project.

FSOO Building Block **C.2 Rates - Soo Line Railroad Company (CP)**

The following rates, reimbursement provisions, and excluded conditions will be used to determine the contractor's cost of flagging:

- $1,200 daily rate for an eight-hour day (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),
- $1,500 daily rate for an eight-hour day on Saturdays, Sundays or holidays (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),
- $151 per hour overtime rate for all time worked before or after the regular assigned eight hours on any day, or for a minimum three hour call on Saturdays, Sundays, or Holidays.

  If a flagger must be relieved due to hours of service requirements, arrangements will be made for a relief flagger.

  The flagger is required to set flags each day in advance of the contractor commencing work that will require flagging. The flagger must also remove the flags each day after the completion of work that required flagging. Any time worked before or after the minimum eight-hour flagging day to set or remove flags will be billed at the overtime rate. The contractor is responsible for knowing the requirements of the railroad for arranging and terminating flagging services and for the associated costs of those services.

FSSAM Building Block **C.2 Rates - Wisconsin Central Ltd and Sault Ste. Marie Bridge Company (CN)**

The following rates, reimbursement provisions, and excluded conditions will be used to determine the contractor's cost of flagging:

- $1,300 daily rate (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses) for a 10 hour day (this includes 2 hours of overtime hours to set/remove flags) flagging day at the job site;
- $1,500 daily rate (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses) for a 10 hour day (this includes 2 hours of overtime hours to set/remove flags) flagging day at the job site on Saturdays, Sundays or holidays;
- $150 per hour overtime rate for all time worked before or after the 10 hour flagging day.

The railroad will require prepayment for flagging. Any time worked before or after the 10-hour flagging day will be billed at the overtime rate. The contractor is responsible for knowing the requirements of the railroad for arranging and terminating flagging services and for the associated costs of those services.

FUP Building Block C.2 Rates - Union Pacific

The following rates, reimbursement provisions, and excluded conditions will be used to determine the contractor's cost of flagging:

- $1,150 daily rate for an eight-hour day (including wages, labor surcharges, lodging, vehicle and mileage expenses),
- $1,500 "Rest Time" or nightly rate for weekday overnight work for an eight-hour day (including wages, labor surcharges, lodging, vehicle and mileage expenses)
- $1,260 daily rate for an eight-hour day on Saturdays, Sundays, or holidays (including wages, labor surcharges, lodging, vehicle and mileage expenses)
- $1,500 "Rest Time" or nightly rate for weekend overnight work for an eight-hour day (including wages, labor surcharges, lodging, vehicle and mileage expenses)
- $175 per hour overtime rate for all time worked before or after the regular assigned eight hours on any day, or for a minimum three hour call on Saturdays, Sundays, or Holidays.

The railroad will require pre-payment. The flagger is required to set flags each day in advance of the contractor commencing work that will require flagging. The flagger must also remove the flags each day after the completion of work that required flagging. Any time worked before or after the minimum eight-hour flagging day to set or remove flags will be billed at the overtime rate. The contractor is responsible for knowing the requirements of the railroad for arranging and terminating flagging services and for the associated costs of those services.

FWSOR Building Block C.2 Rates - Wisconsin and Southern Railroad Company

The following rates, reimbursement provisions, and excluded conditions will be used to determine the contractor's cost of flagging:

- $95 per hour for up to nine-hours at the work-site per day (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),
- $140 per hour for all hours over nine in any week-day (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),
- $190 per hour for up to nine hours at the work-site on Saturdays (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),
- $190 per hour for all hours over nine on Saturdays (including wages, labor surcharges, meal, lodging, vehicle and mileage expenses).

$190 per hour for up to nine hours on Sundays or holidays (including wages, labor surcharges, meal, lodging, vehicle and mileage expenses).

FWCL Building Block C.2 Rates - Wisconsin Central Ltd and Sault Ste. Marie Bridge Company (CN)

The following rates, reimbursement provisions, and excluded conditions will be used to determine the contractor's cost of flagging:

- $1,300 daily rate (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses) for a 10-hour day (this includes 2 hours of overtime hours to set/remove flags) flagging day at the job site;

- $1,500 daily rate (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses) for a 10-hour day (this includes 2 hours of overtime hours to set/remove flags) flagging day at the job site on Saturdays, Sundays or holidays;
- $150 per hour overtime rate for all time worked before or after the 10-hour flagging day.

The railroad will require prepayment for flagging. Any time worked before or after the 10-hour flagging day will be billed at the overtime rate. The contractor is responsible for knowing the requirements of the railroad for arranging and terminating flagging services and for the associated costs of those services.

FOTHER Building Block **C.2 Rates - *Select from drop-down***

The following rates, reimbursement provisions, and excluded conditions will be used to determine the contractor's cost of flagging:

- Enter dollar amount daily rate for an eight-hour day (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),
- Enter dollar amount daily rate for an eight-hour day on Saturdays, Sundays or holidays (including wages, labor surcharges, meals, lodging, vehicle and mileage expenses),
- Enter dollar amount per hour overtime rate for all time worked before or after the regular assigned eight hours on any day, or for a minimum three hour call on Saturdays, Sundays, or Holidays.

The flagger is required to set flags each day in advance of the contractor commencing work that will require flagging. The flagger must also remove the flags each day after the completion of work that required flagging. Any time worked before or after the minimum eight-hour flagging day to set or remove flags will be billed at the overtime rate. The contractor is responsible for knowing the requirements of the railroad for arranging and terminating flagging services and for the associated costs of those services.

SCN Building Block All employees of contractors who work on CN properties are required to have minimum CN Safety and Security Awareness training. This training can be obtained by registering and following the CN link through www.contractororientation.com. This training is good for a period of one year.

a. Exception: CN has exempted from this training those it classifies as "Delivery Persons". Delivery Persons include contractors such as UPS, FedEx, trucking companies, etc. who merely access the property to supply materials or equipment.

The security awareness and contractor orientation certification must be renewed for projects that will carry over beyond the one-year period. Contractor and subcontractor employees shall wear the identification badge issued by www.contractororientation.com when on railroad right-of-way. Costs associated with training and registration are incidental to other items in the contract.

If employees of contractors have a current eRailSafe badge for CN then an additional badge is not required from www.contractororientation.com.

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

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

107-054 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use on all projects that require a COE Permit

17. stp-107-054 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 Enter name of contact at Enter phone number.

stp-107-054 (20080901)

18. stp-107-055 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 (>104º F) application.

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

stp-107-055 (20130615)

107-056 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Must be added to special provisions if anticipated ground disturbance is 1 acre or greater.

19. stp-107-056 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)

20. stp-107-060 Construction Over or Adjacent to Navigable Waters.

The Enter waterway name is classified as a ***Select from drop-down.*** navigable waterway under standard spec 107.19.

stp-107-060 (20171130)

107-065 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Select this STSP if the utility conforms to Admin Rule Trans 220. You must include 107-065 or 107-066 in the special provisions. Add the utilities special provision after the stp number and date.

21. stp-107-065 Utilities.

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

stp-107-065 (20080501)

107-066 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Select this STSP if the utility does not conform to Admin Rule Trans 220. You must include 107-065 or 107-066 in the special provisions. Add the utilities special provision after the stp number and date.

22. stp-107-066 Utilities.

This contract does not come under the provision of Administrative Rule Trans 220.

stp-107-066 (20080501)

107-070 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Required in all contracts with waterway structures.

23. stp-107-070 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)

107-100 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

WisDOT STSP Hazmat petroleum Remediation Scenario 1 - Petroleum contamination is located beyond the construction limits. This is a notice to the contractor that contamination is located in the vicinity of the project but is not expected to be encountered. If contamination is encountered, then the contractor shall stop operations and notify the engineer. Often the department utilizes existing information from investigations performed by nearby property owners and their environmental consultants; if that is the case, then make appropriate changes above. Depending on the project, the contact for the reports may be the project engineer, regional environmental coordinator, Bureau of Equity and Environmental Services, Department of Natural Resources Regional Office, or the Department of Commerce Regional Office.

24. stp-107-100 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. Station Enter station # to Enter station # from Enter # of feet feet Enter LT or RT of centerline to Enter # of feet feet Enter LT or RT of centerline.
2. Station Enter station # to Enter station # from Enter # of feet feet Enter LT or RT of centerline to Enter # of feet feet Enter LT or RT of 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: Enter name, address, phone #.

stp-107-100 (20050901)

107-105 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP if there is contamination within construction limits, but others will remove it before construction.

25. stp-107-105 Notice to Contractor – Contamination Removed Before Construction.

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

1. Station Enter station # to Enter station # from Enter # of feet feet Enter LT or RT of centerline to Enter # of feet feet Enter LT or RT of centerline.
2. Station Enter station # to Enter station # from Enter # of feet feet Enter LT or RT of centerline to Enter # of feet feet Enter LT or RT of centerline

The contaminated soils at the above sites were located in the excavation limits of this project were removed by others before the start of work under this contract.

If contaminated soils are encountered during excavation at these sites or elsewhere on the project, terminate excavation in the area and notify the engineer.

For further information regarding previous remediation activities at these sites contact: Enter name, address, phone # of contact person.

stp-107-105 (20080902)

107-110 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use if contamination is present within construction limits, and others will remove it during construction. WisDOT STSP Hazmat Petroleum Remediation Scenario 3 - Petroleum contamination is located within the construction limits, but the contamination will be removed by others during construction. This is a situation where a willing responsible party and their environmental consultant (or the department's environmental consultant) will perform the remediation and provide a "clean" area for the road contractor. Depending on the number of sites and the extent and volume of contamination, the time window needed for these activities will vary anywhere from a few days to a few weeks. Plan accordingly and consult the district environmental coordinator or BEES for help. Often the department utilizes existing information from investigations or remediations performed by nearby property owners and their environmental consultants; if that is the case, make the appropriate changes to the article. Depending on the project, the contact for the reports may be the project engineer, regional environmental coordinator, Bureau of Environment, Department of Natural Resources Office, or the Department of Commerce Regional Office.

26. stp-107-110 Notice to Contractor – Contamination Removed During Construction.

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. Station Enter station # to Enter station # from Enter # of feet feet Enter LT or RT of centerline to Enter # of feet feet Enter LT or RT of centerline.
2. Station Enter station # to Enter station # from Enter # of feet feet Enter LT or RT of centerline to Enter # of feet feet Enter LT or RT of centerline

The contaminated soils at the above sites that are within the excavation limits of this project will be removed by others concurrent with the work under this project.

Supply the schedule of operations in the contaminated area to the engineer at the preconstruction conference. The department will coordinate the remediation activities by others.

Provide the engineer with a written notice at least Enter # of calendar days calendar days before the schedule date of beginning work in the contaminated areas.

Initial contractor work in contaminated areas before the start of remediation activities by others shall be limited to Enter allowed work. Then, suspend work operations in contaminated areas to allow remediation activities by others. The remediation activities of Enter allowed work is estimated to take Enter # of calendar days calendar days to complete.

The Hazardous Materials Report is available by contacting Enter name, address, phone #.

stp-107-110 (20030820)

27. stp-107-115 Health and Safety Requirements for Workers Remediating Petroleum Contamination.

Add the following to standard spec 107.1(2):

Soil contamination with gasoline, diesel fuel, fuel oil, or other petroleum related products may be encountered during excavation activities. Prepare a site-specific Health and Safety Plan complying with the Occupational Safety and Health Administration (OSHA) standard for Hazardous Waste Operation and Emergency Response (HAZWOPER), 29 CFR 1910.120.

All site workers taking part in remediation activities or who will have the reasonable probability of exposure of safety or health hazards associated with the hazardous material shall have completed Health and Safety training that meets OSHA requirements. Before the start of remediation work, submit to the engineer a site-specific Health and Safety Plan, and written verification that workers will have completed up-to-date OSHA training.

Develop, delineate, and enforce the health and safety exclusions zones for each contaminated site location pursuant to 29 CFR 1910.120.

stp-107-115 (20150630)

107-120 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP for bridges that have been tested for asbestos, where asbestos is present but will not be disturbed during construction.

28. stp-107-120 Notice to Contractor, Asbestos Containing Materials on Structure.

Enter inspectors name, License Number Enter license number, inspected Structure Enter Structure # for asbestos on Enter Date of Inspection. Regulated Asbestos Containing Material (RACM) was found on this structure in the following locations and quantities: state what bridge materials has ACM, where it is found on the bridge, what category of material it is and how much of it there is.

A copy of the inspection report is available from: Enter name and phone number of regional contact. Locations of asbestos containing material are noted on the plan set. Do not disturb any asbestos containing material. Should asbestos containing material be disturbed, 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.

stp-107-120 (20120615)

107-125 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP only for bridges TO BE DEMOLISHED that have been inspected and have no asbestos, or no regulated levels of asbestos. To obtain the information needed in parentheses to complete this article, refer to the Highway Structures Information System (HSIS) on the DOT extranet site at https://trust.dot.state.wi.us/hsi/HSIController. From that screen go to File, Open Inventory, and type in the bridge number. Use the tabs to find specific information on the various screens. To find street address of county highway commission or town clerk, use the following webstites: http://wicounties.org/ or http://gab.wi.gov/clerks/directory

29. stp-107-125 Notice to Contractor, Notification of Demolition and/or Renovation No Asbestos Found.

Enter inspectors name, License Number Enter license number, inspected Structure Enter Structure # for asbestos on Enter Date of Inspection. No regulated Asbestos Containing Material (RACM) was found on this structure. A copy of the inspection report is available from: Enter name and phone number of regional contact.

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 Enter name and phone number of regional contact 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 Enter Structure #, Enter Route on from H.S.I.S Route screenover Enter Route Under from H.S.I.S. Route screen
- Site Address: Enter Structure Route location from H.S.I.S Route screen, or if not available, enter Section, Town and Range or Latitude and Longitude, and town/city/village from the H.S.I.S. Location screen
- Ownership Information: Enter (Street address of county highway commission if county, street address of town clerk if township. If WisDOT ownership, use the following format: WisDOT Transportation (Location) Region, Street Address, PO Box, City, State, Zip)
- Contact: Enter Regional construction project engineer's name
- Phone: Enter Regional construction project engineer's phone
- Age: Enter # of years years old. This structure was constructed in Enter construction date from H.S.I.S.
- Area: Enter deck area from H.S.I.S. Geometry screen 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.

stp-107-125 (20120615)

107-127 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP for bridges that are not being demolished, that have been inspected and have no asbestos or no regulated levels of asbestos.

30. stp-107-127 Notice to Contractor, Verification of Asbestos Inspection, No Asbestos Found.

Enter inspectors name, License Number Enter license number, inspected Structure Enter Structure # for asbestos on Enter Date of Inspection. No regulated Asbestos Containing Material (RACM) was found on this structure. A copy of the inspection report is available from: Enter name and phone number of regional contact.

stp-107-127 (20120615)

107-200 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Applicability: ***The Native American Hiring Provision (NAHP) is applied to projects located on, partially on or directly adjacent to (touching) lands held under the ownership and jurisdiction of the tribes. Identification of such projects is completed by the project team, including the regional tribal liaison, during the scope certification process. The applicability should be re-assessed at pre-DSR and pre-PS&E points in the design development process.***

Suggested wording for advertising: ***This contract requires pre-bid contact with the tribe whose lands the project is located on or partially on held under the ownership and jurisdiction of the tribes. Additional documentation will be submitted with the Proposal Request Form (available online). See special provision and contact (insert project manager, and contract information), for information on this requirement.***

Suggested policy considerations: ***Any time this provision is included within a contract the regional tribal liaison and labor compliance specialist should be included in discussions and meetings. A pre-advertising meeting between the regional project team, including the project manager, regional labor compliance specialist, regional tribal liaison, and the identified tribe's labor contact and any other tribal staff requested by the tribe should be arranged. WisDOT shall provide a timeline, basic scope of work and all relevant online links to project plans, bidding and advertising procedures and assist with outreach expectations, recommendations for tribal coordination meeting agenda and identify any other tribal project coordination needs or requirements. This is also an opportunity to discuss the DBE goals set and outreach processes required as part of ASP 3, when federal funds are used.***

Suggested addition for Notes to Construction: ***For Native American Hiring Provision – reporting for this provision will be sent to the Labor Compliance Specialist and the tribe on a monthly basis as well as a final report with data from the prime contractor and all subcontractors.***

Suggested information for PM (Project Manager) for pre-bid inquiries: ***The purpose of the Native American Hiring Provision is to outline the requirements and procedures necessary to promote and encourage Native American employment opportunities on WisDOT construction projects located on, partially and adjacent to tribal lands.***

The provision was developed in direct consultation with tribes. It was established in response to the statutory limitations the Wisconsin Department of Transportation has in enforcing Tribal Employment Rights Ordinances. While the provision is a tool designed to enhanced labor opportunities, the Tribal Labor Advisory Committee and Statewide Native American Labor Initiative has established other tools and resources designed to promote labor enhancements that extend beyond project-by-project hiring.

The provision is designed to stimulate early and meaningful dialog between contractors doing business in tribal communities and tribal workforce development programs. It encourages Native American hiring opportunities through enhanced communications and reporting mechanisms. The provision is applied to both state and federal projects.

For further information contact the Regional Tribal Liaison, State Tribal Affairs Managers: Sandy Stankevich, (715) 365-5784 sandy.stankevich@dot.wi.gov or Cyless Peterson, (608) 261-0131 Cyless.peterson@dot.wi.gov

Documentation and Communication Requirements:

Pre-bid: ***The Pre-Bid Contact Verification Form, DT2400 must be submitted with the bid request. This form is documentation of all efforts to communicate with the tribal workforce office to share hiring procedures and employment opportunities.***

Construction: ***Additional communication with the tribal workforce office should be documented throughout the project. The Native American Hiring Provision Report DT2405 will be submitted via email on the 15th of every month for the previous month throughout the project to the end of construction. It is to be submitted to the regional labor compliance specialist.***

31. stp-107-200 Native American Hiring Provision.

Pre-Bid

Before bid submittal, contact the (insert specific tribe who will serve as the labor contact) to provide information on hiring procedures and future employment opportunities, and gather information on the tribal work force and tribal resources (ex. Native American owned DBE, tribal businesses, products, potential workers, etc.).

(Insert tribe) tribal labor office contact information:

(Tribal labor contact, name and title)
(Address)
Office: (Office Phone):
Cell: Cell:
Email:

Maintain documentation of all efforts made to communicate with (insert specific tribe who will serve as the labor contact) using DT2400 Pre-Bid Contact Verification Form. This form is to be used as a record of

communication with the designated tribe's assigned contact person. Please submit the DT2400 form and any supporting documentation when you submit the bid request (DT1633) for the project via email to:

DOT DTSD Highway Construction Contractors constplans.dtid@dot.wi.gov

The Eligible Bidders list will not be updated until this documentation is received.

After Execution

The contractor shall contact (insert the name of the tribe labor contact person) of the (Insert tribe) with the following information regarding available employment opportunities for prime and subcontractors at a minimum of 5 business days before the tribal coordination meeting:

- Job classification/trade
- Job qualifications and required skills
- Employment period
- Wage
- Copy of job application
- List of subcontractors and contact information (ex. Name, email, phone, etc.)
- List of available internships

After receiving employment opportunities, (insert the name of the tribe labor contact person) may provide employment referrals or recruitment sources throughout the life of the project to obtain qualified referrals.

Document all efforts made to communicate job opportunities and the results of hiring activities throughout the life of the contract. Utilize DT2405 Native American Hiring Provision Report and submit it to (Insert tribe) and Regional Labor Compliance Specialist (insert name and email address) on the 15th of every month for the previous month until the project construction is complete. Final report should be indicated on the form. Report shall include prime contractor and subcontractor data.

Tribal Coordination Meeting

Between execution of contract and the project pre-construction meeting, the contractor and (Insert tribe) will setup and facilitate the Tribal Coordination Meeting, establish an agenda, date and location. Any cost incurred for the meeting would be incidental to the overall project cost. The contractor shall work with the Tribe to determine who from Tribal leadership and staff the contractor should notify and invite to the meeting.

The contractor shall also notify and invite the Regional Tribal Liaison (insert name and email address) ; the Regional Labor Compliance Specialist (insert name and email address) ; the WisDOT Tribal Affairs Program Manager, Sandy Stankevich, sandy.stankevich@dot.wi.gov ; the Tribal Affairs Project Manager, Cyless Peterson, Cyless.peterson@dot.wi.gov; and the WisDOT region project team to the meeting.

This meeting may also include potential interviews or introductions with potential employees. The prime contractor and all subcontractors shall attend this meeting. Discussions are to include available employment opportunities and other tribal areas of interest such as scope of work, tribal regulations and ordinances, borrow sites, waste sites, and available aggregate.

Project Completion

Submit documentation summarizing communications regarding job opportunities throughout the life of the contract. This can be done using the DT2405 form noting that this is the final report. Provide final report to the tribe and the Regional Labor Compliance Specialist compiling the results of hiring activities for the prime contractor as well as for subcontractors at all tiers.

stp-107-200 (20200629)

107-220 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this special provision when archaeological sites are located within the project limits.

32. stp-107-220 Archaeological Site.

Enter archeological site name site is located approximately Enter site location (station-station, LT/RT) 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 ***Select from drop-down***. 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)

33. stp-108-056 Incentive/Disincentive for Interim Completion of Work, Item 108.3100.S.

A General

This item shall consist of either an incentive payment or a disincentive pay reduction as specified below.

The contractor shall complete all of the work necessary to enter requirements for work completion on this contract before 12:01 AM date.

The completion time allowed for this contract is based on an expedited work schedule.

Under this Incentive/Disincentive plan, no time extensions will be granted for adverse weather conditions; for delays in material deliveries; or for labor disputes unless it can be shown that such disputes are industry wide.

The maximum incentive payment, as shown on the Schedule of Items, is for department accounting purposes. The actual incentive payment the contractor may receive shall be according to section B of this provision.

Incentive payments will not be considered as part of the money value of the work completed for computing time extensions.

B Incentive Payment

The contractor shall be entitled to an incentive payment for completion of all of the work necessary to enter requirements for work completion on this contract before 12:01 AM date.

The incentive payment will be paid at the rate of $Enter incentive amount per calendar day, of completion before 12:01 AM date. The maximum amount of incentive payment cannot exceed $Enter maximum incentive amount.

C Disincentive Pay Reduction

Should the contractor fail to complete all of the work necessary to enter requirements for work completion under this contract before 12:01 AM date, the contractor shall be liable to the department for a pay reduction in the amount of $Enter the disincentive amount per calendar day for each calendar day after 12:01 AM date that work remains incomplete. An entire calendar day will be assessed for any period of time within a calendar day that the work remains incomplete beyond 12:01 AM.

If contract time expires before completing all work specified in the contract, additional liquidated damages will be assessed as specified in standard spec 108.11 or as specified within this contract.

D Measurement and Payment

Incentive/Disincentive for interim Completion of Work will be measured by the calendar day and will be paid/assessed at the contract unit price per calendar day.

The unit price per day for an incentive pay adjustment will be compensation in full for completing the work as specified in section B of this provision.

The unit price per day for a disincentive pay reduction will be assessed for failing to complete all the work as specified in section C of this provision.

stp-108-056 (20161130)

108-060 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use where applicable. Choose who shall conduct the meeting - the department or the contractor. Other attendees may be included.

34. stp-108-060 Coordination with Businesses and Residents.

Select from drop-down. arrange and conduct a meeting between the contractor, the department, affected residents, local officials and business people to discuss the project schedule of operations including vehicular and pedestrian access during construction operations. Hold the first meeting at least one week before the start of work under this contract and ***Select from drop-down.*** The ***Select from drop-down.*** arrange for a suitable location for meetings that provides reasonable accommodation for public involvement. The department will prepare and coordinate publication of the meeting notices and mailings for meetings. The contractor shall schedule meetings with at least 2 weeks' prior notice to the engineer to allow for these notifications.

stp-108-060 (20141107)

108-065 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Lane Rental article for simple night work. See FDM 19-15-2 for guidance.

35. stp-108-065 Lane Rental Fee Assessment.

A General

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

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

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

If you don't have another project in the vicinity of this project, the following paragraph may be deleted:

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

B Lane Rental Fee Assessment

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

- $Lane Rental Dollar Amount per lane, per direction of travel, per hour broken into 15-minute increments

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

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

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

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

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

stp-108-065 (20161130)

108-070 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Lane Rental article example for multiple closure situations. See FDM 19-15-2 for guidance.

36. stp-108-070 Lane Rental Fee Assessment.

A General

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

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

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

If you don't have another project in the vicinity of this project, the following paragraph may be deleted:

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

B Lane Rental Fee Assessment

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

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

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

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

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

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

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

stp-108-070 (20161130)

Use this STSP for bridges that have been inspected, have regulated asbestos on them, and the contractor will remove the asbestos during demolition or construction. To obtain the information needed in parentheses to complete this article, refer to the Highway Structures Information System (HSIS) on the DOT extranet site at https://trust.dot.state.wi.us/hsi/HSIController. From that screen go to File, Open Inventory, and type in the bridge number. Use the tabs to find specific information on the various screens. To find street address of county highway commission or town clerk, use the following websites: http://wicounties.org / or http://gab.wi.gov/clerks/directory

37. stp-203-005 Abatement of Asbestos Containing Material Enter Structure #, Item 203.0210.S.

A Description

This special provision describes abating asbestos containing material on structures.

B (Vacant)

C Construction

Enter inspectors name, License Number Enter license number, inspected Structure Enter Structure # for asbestos on Enter Date of Inspection Regulated Asbestos Containing Material (RACM) was found on this structure in the following locations and quantities: (state what bridge materials have ACM, where it is found on the bridge, what category of material it is, and how much of it there is).

The RACM on this structure must be abated by a licensed abatement contractor. A copy of the inspection report is available from Enter name and phone number of regional contact. 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 and the abatement report to Enter name and phone number of regional contact 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 Enter Structure #, Enter Route on from H.S.I.S Route screen over Enter Route Under from H.S.I.S. Route screen
- Site Address: Enter Structure Route location from H.S.I.S Route screen, or if not available, enter Section, Town and Range or Latitude and Longitude, and town/city/village from the H.S.I.S. Location screen
- Ownership Information: Enter (Street address of county highway commission if county, street address of town clerk if township. If WisDOT ownership, use the following format: WisDOT Transportation (Location) Region, Street Address, PO Box, City, State, Zip)
- Contact: Enter Regional construction project engineer's name
- Phone: Enter Regional construction project engineer's phone
- Age: Enter # of years years. This structure was constructed in Enter construction date from H.S.I.S.
- Area: Enter deck area from H.S.I.S. Geometry screen 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.

D Measurement

The department will measure Abatement of Asbestos Containing Material Enter Structure #, completed in according to the contract and accepted, as a single complete lump sum unit of work.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0210.S	Abatement of Asbestos Containing Material Enter Structure #	LS

Payment is full compensation for submitting necessary forms; removing all asbestos; and for properly disposing of all waste materials.

stp-203-005 (20120615)

Use this STSP for utilities with transite piping, and for buildings that have been inspected, and have regulated asbestos on them which the contractor will remove during relocation or demolition.

38. stp-203-006 Abatement of Asbestos Containing Material, Item 203.0215.S.

A Description

This special provision describes abating asbestos containing material in buildings or utility conduit.

B (Vacant)

C Construction

For Buildings:

Enter inspectors name, License Number: Enter license number, inspected Structure: Enter parcel number and street address for asbestos on Enter Date of Inspection. Regulated Asbestos Containing Material (RACM) was found on this structure in the following locations and quantities: (state what materials have ACM, where it is found on the building, what category of material it is, and how much of it there is). A copy of the inspection report is available from Enter name and phone number of regional contact.

For Utilities:

The Enter utility name, utility owner, from station to station, conduit located between Enter station number and Enter station number is known to be transite and must be handled as RACM. The total number of linear feet to be managed is Enter number of linear feet.

The RACM must be abated by a licensed abatement contractor. 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 8/11), or subsequent revision) via U.S. mail, hand-delivery, or using the online notification system at least 10 working days before beginning any demolition or relocation. Pay all associated fees. Provide a copy of the completed 4500-113 form and the abatement report to Enter name and phone number of regional contact and DOT BTS-ESS attn: Hazardous Materials Specialist, PO Box 7965, 5 South S513.12, Madison, WI 53707-7965; or via email to DOTHAZMATUNIT@dot.wi.gov In addition, comply with all local or municipal asbestos requirements.

D Measurement

The department will measure Abatement of Asbestos Containing Material, as a single complete lump sum unit of work, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0215.S	Abatement of Asbestos Containing Material	LS

Payment is full compensation for submitting necessary forms; removing all asbestos; and for properly disposing of all waste materials.

stp-203-006 (20191121)

203-010 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use where structure removal, reconstruction, or other construction or maintenance operations may generate falling debris that might pose a safety hazard or environmental/contamination concerns to facilities like railroads, bike paths, roadways, or navigable waterways located under the structure in question. For work over waterways, independently review the need for Removing Old Structure Over Waterway STSPs (203-015, 203-020, or 203-025) to address potential waterway contamination concerns. This item is not used when one of the Removing Old Structure Over Waterway STSP's is used. This item is most typically used where the removal area is located over a railroad and may require special consideration. Early coordination with the region railroad coordinator will be necessary. WisDOT Bridge Manual 6.3.3.8 contains guidance for the use of this special provision.

Designer Note: A separate bid item is required for each applicable structure on a project. Enter the name of the railroad, bike path, roadway, navigable waterway, or other facility to be protected in the form field in paragraph C(1). Adjust the timing requirement in paragraph C(3) if something other than 15 working days is more appropriate. Enter contact information in the form fields in paragraph C(3). If no notice is required before conducting debris generating operations, delete paragraph C(3).

39. stp-203-010 Debris Containment Enter Structure #, Item 203.0225.S.

A Description

This special provision describes providing a containment system to prevent debris, chippings, saw cut slurry, or any other waste from structure removal, reconstruction, or other construction or maintenance operations from falling onto facilities, railways, waterways, or wetlands located under or adjacent to the structure. Using this containment system does not relieve the contractor of requirements under standard spec 107.17 and standard spec 107.19 or requirements under a U.S. Army Corps of Engineers Section 404 Permit.

B (Vacant)

C Construction

Before starting work, submit a debris containment plan to the engineer for review. Incorporate engineer-requested modifications. Do not start work over Enter the name of the facility until the engineer approves the debris containment plan.

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

At least 15 working days before conducting potential debris generating operations, contact the following owners or lessees:

1. Enter name and contact information
2. Enter name and contact information

Upon completion of the work or when directed by the engineer, remove the debris containment system.

D Measurement

The department will measure Debris Containment Enter Structure # as a single lump sum unit of work for each structure, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0225.S	Debris Containment Enter Structure #	LS

Payment for Debris Containment is full compensation supplying a debris containment plan; and for furnishing, installing, maintaining, and removing a debris containment system.

stp-203-010 (20200629)

203-015 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this special provision where it is not possible to remove the structure without dropping it, or a portion of it, into a waterway or wetland; and that waterway or wetland is not highly environmentally sensitive. This special provision is typically appropriate for removing the following structure types: slab spans; voided slabs; cast-in-place girder bridges; earth-filled bridges.

Designer Notes: This special provision is 1 of 3 special provisions for removing structures over waterways: Removing Old Structure Over Waterway, Item 203.0500.S; Removing Old Structure Over Waterway with Minimal Debris, Item 203.0600.S; Removing Old Structure Over Waterway with Debris Capture System, Item 203.0700.S. Designer should not automatically defer to the recommendation from the initial WisDNR letter, but should work with WisDOT and WisDNR environmental coordinators to reach consensus on which special to use for the removal. The special provision language provided is intended to be a reasonable starting point; however, the designer may need to expand the special provision language to address additional DNR or other concerns and issues. See the WisDOT Bridge Manual Chapter 6, section 6.3.3.8 for detailed guidance on choosing the proper bid item for removing structures.

40. stp-203-015 Removing Old Structure Over Waterway Station Enter Station #, Item 203.0500.S.

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

Add the following to standard spec 203:

203.3.6 Removals Over Waterways and Wetlands

203.3.6.1 Removing Old Structure Over Waterway

(1) Remove the existing structure Enter Structure # over the Enter waterway name conforming to the contractor's approved structure removal and clean-up plan. Remove all reinforcing steel, all concrete, and all other debris that falls into the waterway or wetland. Remove large pieces of the structure within 36 hours. The contractor may leave limited amounts of small concrete pieces scattered over the waterway floor or wetland only if the engineer allows.

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

1. Methods and schedule to remove the structure.
2. Methods to control potentially harmful environmental impacts.
3. Methods for removing piers and abutments. If blasting in water, include restrictions that regulatory agencies and the contract require.
4. Methods for cleaning the waterway or wetlands.

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

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0500.S	Removing Old Structure Over Waterway Station Enter Station #	LS

stp-203-015 (20190618)

203-020 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this special provision where it is possible to remove the structure without dropping it, or a portion of it, into a waterway or wetland; and that waterway or wetland is not highly environmentally sensitive. This special provision is typically appropriate for removing all structures types except for the following bridges which are typically covered under STSP 203-015: slab spans; voided slabs, cast-in-place girder bridges, earth-filled bridges. For unique or difficult removals, designers should consult with the contracting community to assess costs and the feasibility of a particular removal technique. Designers may need to customize this special provision to deal with pier or abutment removal and other project specific details.

This special provision is 1 of 3 special provisions for removing structures over waterways: Removing Old Structure Over Waterway, Item 203.0500.S; Removing Old Structure Over Waterway with Minimal Debris, Item 203.0600.S; Removing Old Structure Over Waterway with Debris Capture System, Item 203.0700.S. Designer should not automatically defer to the recommendation from the initial WisDNR letter, but should work with WisDOT and WisDNR environmental coordinators to reach consensus on which special to use for the removal. This special provision will likely be used for most removals. The special provision language provided is intended to be a reasonable starting point; however, the designer may need to expand the special provision language to address additional DNR or other concerns and issues. CMM 6-45.6 contains example removal and clean-up methods corresponding to this special provision. See the WisDOT Bridge Manual Chapter 6, section 6.3.3.8 for detailed guidance on choosing the proper bid item for removing structures.

41. stp-203-020 Removing Old Structure Over Waterway With Minimal Debris Station Enter Station #, Item 203.0600.S.

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

Add the following to standard spec 203:

203.3.6 Removals Over Waterways and Wetlands

203.3.6.2 Removing Old Structure Over Waterway with Minimal Debris

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

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

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

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

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0600.S	Removing Old Structure Over Waterway With Minimal Debris Station Enter Station #	LS

stp-203-020 (20190618)

Consider using this special provision where a waterway or wetland is highly environmentally sensitive. Before including this special provision in the contract, consult with the department's regional environmental coordinator to determine if the affected waterway or wetland is highly environmentally sensitive and if this special provision is appropriate. For unique or difficult removals, designers should consult with the contracting community to assess costs and the feasibility of a particular removal technique. Designers may need to customize this special provision to deal with pier or abutment removal and other project specific details.

Designer Notes: This special provision is 1 of 3 special provisions for removing structures over waterways: Removing Old Structure over Waterway, Item 203.0500.S; Removing Old Structure Over Waterway With Minimal Debris, Item 203.0600.S; Removing Old Structure Over Waterway With Debris Capture System, Item 203.0700.S. Designer should not automatically defer to the recommendation from the initial WisDNR letter, but should work with WisDOT and WisDNR environmental coordinators to reach consensus on which special to use for the removal. The special provision language provided is intended to be a reasonable starting point; however, depending on the situation the designer may need to expand the special provision language to address additional DNR or other concerns and issues. CMM 6-45.6 contains example removal and clean-up methods corresponding to this special provision. See the WisDOT Bridge Manual Chapter 6, section 6.3.3.8 for detailed guidance on choosing the proper bid item for removing structures.

42. stp-203-025 Removing Old Structure Over Waterway With Debris Capture System Station Enter Station #, Item 203.0700.S.

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

Add the following to standard spec 203:

203.3.6 Removals Over Waterways and Wetlands

203.3.6.3 Removing Old Structure Over Waterway with Debris Capture System

(1) Remove the existing Structure Enter Structure # over the Enter waterway name in large sections and conforming to the contractor's approved structure removal plan. Due to the very sensitive nature of the Enter waterway name, provide a debris capture and containment system for superstructure removal that prevents all large pieces and virtually all other debris, including fine particles and slurry, from entering the waterway or wetland.

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

- Methods and schedule to remove the structure.
- Methods to control potentially harmful environmental impacts.
- Methods to avoid or minimize the discharge of any pollutant to the waterway or wetland during superstructure removal.
- Details of the debris capture and containment system for superstructure removal including contingency plans to deal with potential failures.
- Methods to control dust and contain slurry.
- Methods for removing piers and abutments. If blasting in water, include restrictions that regulatory agencies and the contract require.

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

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0700.S	Removing Old Structure Over Waterway With Debris Capture System Station Enter Station #	LS

stp-203-025 (20190618)

204-025 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

General STSP for removing miscellaneous items. A specific number according to the unit of measure is available in Trans*port: 204.9025.S CF, 204.9035.S CY, 204.9060.S Each, 204.9070.S GAL, 204.9090.S LF, 204.9105.S LS, 204.9125.S MI, 204.9165.S SF, 204.9170.S STA, 204.9180.S SY, 204.9195.S Ton. Put correct item number, including the supplemental number following the.S (such as.01 for item 204.9060.S.01), in the title and payment table when using this STSP.

43. stp-204-025 Removing Enter Item Description, Item *Select from drop-down.*.

A Description

This special provision describes removing Enter Item Description conforming to standard spec 204.

B (Vacant)

C (Vacant)

D Measurement

The department will measure Removing Enter Item Description in Enter unit of measure, acceptably completed.

E Payment

Add the following to standard spec 204.5:

ITEM NUMBER	DESCRIPTION	UNIT
select item num	Removing Enter Item Description	Enter unit of measure

stp-204-025 (20150630)

44. stp-204-041 Removing Concrete Surface Partial Depth, Item 204.0109.S.

A Description

This special provision describes removing a portion of concrete surfaces as the plans show and conforming to standard spec 204.

B (Vacant)

C Construction

C.1 Equipment

Use a machine that provides a surface finish acceptable to the engineer. Shroud the machine to prevent discharge of any loosened material into adjacent work areas or live traffic lanes.

Use a machine that is equipped with electronic devices that provide accurate depth, grade and slope control, and acceptable dust control system.

C.2 Methods

Remove existing concrete to the depths as shown on the plan by grinding, planing, chipping, sawing, milling, or by using other methods approved by the engineer.

Perform the removal operation in such a manner as to preclude damage to the remaining pavement and results in a reasonable uniform plane surface free of excessive large scarification marks and having a uniform transverse slope.

The sequence of removal operations shall be such that no exposed longitudinal joints 2 inches or more in depth remain during non-working hours. Windrowing or storing of the removed material on the roadway will only be permitted in conjunction with a continuous removal and pick-up operation. During non-working hours, clear the roadway of all materials and equipment.

Removed pavement becomes the property of the contractor. Properly dispose of it as specified in standard spec 204.3.1.3.

D Measurement

The department will measure Removing Concrete Surface Partial Depth in area by the square foot of surface area removed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
204.0109.S	Removing Concrete Surface Partial Depth	SF

Payment is in full compensation for removing the concrete; and for disposing of materials.

stp-204-041 (20080902)

204-045 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP only for milling and removing upper layer longitudinal notched wedge joints for SMA pavement, or as directed by the engineer for specific lengths of joints damaged by traffic (see SDD 13C19 HMA Longitudinal Joints)). It covers the following:

1. ***Milling and removing notched wedge joints.***
2. ***Disposal of milled HMA material.***

45. stp-204-045 Removing Asphaltic Longitudinal Notched Wedge Joint Milling, Item 204.0126.S.

A Description

This special provision describes the milling and removing of the upper layer HMA longitudinal notched wedge joint, including sweeping and cleaning of the affected area prior to paving the adjacent lane. Follow drop-off and hazard protection in standard spec 104.6.1.2.3.

B (Vacant)

C Construction

Prior to paving the adjacent upper layer HMA lane, mill longitudinal notched wedge joint to a true line with a face perpendicular to the surface of the existing asphaltic surface pavement as the plans show or the engineer directs. Provide a uniform milled surface that is reasonably plane, free of excessively large scarification marks, and has the grade and transverse slope the plans show, or the engineer directs. Do not damage the remaining pavement.

Use a self-propelled milling machine with depth, grade, and slope controls. Shroud the drum to prevent discharging loosened material onto the adjacent work areas or live traffic lanes. Provide an engineer-approved dust control system.

Thoroughly clean the milled surface and completely remove all millings from the project site. Unless using a continuous removal and pick-up operation, do not windrow or store material on the roadway. Clear the roadway of all material and equipment during non-working hours. The contractor becomes the owner of the removed asphaltic pavement and is responsible for the disposal as specified in standard spec 204.3.1.3.

D Measurement

The department will measure Removing Asphaltic Longitudinal Notched Wedge Joint Milling by the linear foot unit for all wedge joints, acceptably removed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
204.0126.S	Removing Asphaltic Longitudinal Notched Wedge Joint Milling	LF

Payment is full compensation for milling, removing, sweeping, cleaning, and disposing of materials.

stp-204-045 (20191121)

46. stp-204-050 Abandoning Sewer, Item 204.0291.S.

A Description

This special provision describes abandoning existing sewer by filling it with cellular concrete as the plans show and conforming to standard spec 204 and standard spec 501as modified in this special provision.

B Materials

Provide cellular concrete meeting the following specifications: 1 part cement, 1 part fly ash, 8 parts sand, or an approved equal, and water. Provide cement meeting the requirements of standard spec 501.2.1 for Type 1 Portland Cement. Provide sand meeting the requirements of standard spec 501.2.5.3 Provide water meeting the requirements of standard spec 501.2.4.

C Construction

Fill the abandoned sewer pipe with cellular concrete as the engineer directs. In the event that the sewer cannot be completely filled from existing manholes, tap the sewer where necessary and fill from these locations.

D Measurement

The department will measure Abandoning Sewer in volume by the cubic yard as specified in standard spec 109.1.3.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
204.0291.S	Abandoning Sewer	CY

Payment is full compensation for furnishing all materials and excavating and backfilling where necessary.

stp-204-050 (20080902)

47. stp-204-060 Removing Advance Flasher Assemblies Type 1, Item 204.9001.S; Removing Advance Flasher Assemblies Type 2, Item 204.9002.S.

A Description

This special provision describes removing advance flasher assemblies from the locations the plans show. Rewire and disconnect wiring in the control cabinet as necessary and properly dispose of materials conforming to standard spec 204.3.1.3.

B Materials

Dispose of all materials resulting from removing the Advance Flasher Assemblies including but not limited to poles, break-a-way bases, signal assemblies, bulbs, and wire off the job site.

C Construction

Do not remove existing advance flasher assemblies until proper disconnects and wiring changes in the controller cabinet have been made.

Where an existing advance flasher assembly is mounted to a light pole, remove all signal hardware including wire, conduit, signal assemblies and mounts. Where existing conduit has been installed under concrete sidewalk or roadway, do not remove buried conduit unless directed otherwise by the engineer or unless it is not possible to install new wire through the existing conduit.

D Measurement

The department will measure Removing Advance Flasher Assemblies (Type) by the unit, acceptably removed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
204.9001.S	Removing Advance Flasher Assemblies, Type 1	EACH
204.9002.S	Removing Advance Flasher Assemblies, Type 2	EACH

Payment is full compensation for removing advanced flasher assemblies; for rewiring, as necessary; for disconnecting wiring as necessary in the controller cabinet; and for properly disposing of all materials.

Removal of concrete bases and signs associated with this item will be measured and paid for separately.

stp-204-060 (20170615)

205-003 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Highway contractor (or their subs) performs excavation, loading, hauling, and disposal of petroleum-contaminated soils. Unit of measurement is tons.

Designer Notes: WisDOT STSP Hazmat petroleum remediation Scenario 4 - Petroleum contaminated soil to be excavated and hauled by contractor to a DNR approved bioremediation facility. The department is not the responsible party for the contamination, so soil remediation (excavation) will be limited to the planned zone of construction. The bid item is only for excavation, loading, hauling, and disposal of petroleum contaminated soil and where to no groundwater contamination will be encountered, i.e., excavation activities will occur above the groundwater table and no dewatering is required for project. For a list of the most recent DNR approved bioremediation facilities, contact the DNR regional solid waste coordinator, (contact list can be found at: http://dnr.wi.gov/org/aw/wm/contacts/regions.htm) or contact the regional environmental coordinator, _____: or Bob Pearson from the Bureau of Equity and Envrionmental Services (BEES) at (608) 266-7980.

Note: Also must show extent of contamination on plan and profile sheets using data from Phase 2, 2.5 or 3 work that was performed by department's environmental consultants or other consultants for nearby property owners. For example, shade areas of contamination or draw iso-concentration lines. For help, consult a regional environmental coordinator or BEES. Often the department utilizes information from investigations or remediations performed by nearby property owners and their environmental consultants; if that is the case, then make the appropriate changes above. Depending on the project, the contact for the reports may be a project engineer, district environmental coordinator, BEES, Department of Natural Resources Regional Office, or Department of Commerce regional office. The BEES contracted environmental consultants are required to provide oversight. Contact BEES (Bob Pearson, (608) 266-7980) and they will assign and provide consultant information. BEES will develop a work order with input from the region.

48. stp-205-003 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 Enter Name and address of the nearest DNR approved bioremediation facility.

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 completed testing for soil and groundwater contamination for locations within this project where excavation is required. Testing indicated that petroleum-contaminated soil is present at the following locations the plans show:

1. Station Enter station # to Enter station # from Enter # of feet feet Enter LT or RT of centerline to Enter # of feet feet Enter LT or RT of centerline.
2. Station Enter station # to Enter station # from Enter # of feet feet Enter LT or RT of centerline to Enter # of feet feet Enter LT or RT of centerline

If contaminated soils are encountered elsewhere on the project, terminate excavation activities in the area and notify the engineer.

For further information regarding previous investigation and remediation activities at these sites contact:

Name:	Enter Name
Address:	Enter Address
Phone:	Enter Phone #
Fax:	Enter FAX #
E-mail:	Enter email address

A.3 Coordination

Coordinate work under this contract with the environment consultant:

Consultant:	Enter Consultant
Address:	Enter Address
Contact:	Enter Contact person

Phone: Enter Phone #
Fax: Enter FAX #
E-mail: Enter email address

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 Enter # of cubic yards 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.

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.

stp-205-003 (20150630)

49. stp-205-007 Settlement Gauges, Item 205.2000.S.

A Description

This special provision describes providing settlement gauges and extensions as the plan details show.

B (Vacant)

C Construction

Compact embankment material in the immediate vicinity of the riser pipe to specification requirements, taking all precautions to keep alignment of the riser and the cover pipes vertical at all times. When the embankment reaches a level approximately 12 inches below the top of the riser, notify the engineer; the engineer may direct that an additional section of riser and cover be installed.

Take all necessary precautions to ensure that the settlement gauges are not damaged, displaced or misaligned. If a gauge is damaged, immediately repair or replace it at no expense to the department.

D Measurement

The department will measure Settlement Gauges completed according to the contract and accepted in units.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
205.2000.S	Settlement Gauges	EACH

Payment is full compensation for furnishing and placing settlement gauges; protecting the gauges; and repairing or replacing gauges as necessary.

stp-205-007 (20080902)

Use when reconstructing intersections and there are no other excavation bid items in the contract. Use a separate bid item for each intersection; for example, use 205.9010.S.01 for Location A and use 205.9010.S.02 for Location B.

50. stp-205-010 Grading and Shaping Intersection Enter Location, Item 205.9010.S.

A Description

This special provision describes grading and shaping intersections.

B (Vacant)

C Construction

Grade and shape embankment slopes for intersections at the locations shown on the plans. Furnish materials and construct conforming to the following:

Common excavation and material disposal 205

Embankment 207

Borrow 208

Construction Staking 650

D Measurement

The department will measure Grading and Shaping Intersection Enter Location as a single lump sum unit for each intersection, 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
205.9010.S	Grading and Shaping Intersection Enter Location	LS

Payment is full compensation for construction staking, excavating, grading, shaping, and compacting; and for providing fill.

stp-205-010 (20191121)

Same as STSP 205-010, except finishing items are included. Use a separate bid item for each intersection; for example, use 205.9015.S.01 for Location P and use 205.9015.S.02 for Location Q.

51. stp-205-015 Grading, Shaping and Finishing Intersection Enter Location, Item 205.9015.S.

A Description

This special provision describes grading, shaping, and finishing intersections.

B (Vacant)

C Construction

Grade, shape, and finish embankment slopes for intersections at the locations shown on the plans. Furnish materials and construct conforming to the following:

Common excavation and material disposal 205

Embankment 207

Borrow 208

Topsoil 625

Mulching 627

Fertilizer 629

Seeding 630

Construction Staking 650

D Measurement

The department will measure Grading, Shaping, and Finishing Intersection Enter Location as a single lump sum unit for each intersection, 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
205.9015.S	Grading, Shaping, and Finishing Intersection Enter Location	LS

Payment is full compensation for construction staking, excavating, grading, shaping, compacting, and finishing; for providing fill; and for providing topsoil, fertilizer, seed, and mulch.

stp-205-015 (20191121)

52. stp-205-020 Temporary Emergency Pullouts, Item 205.3000.S.

A Description

This special provision describes grading, furnishing, and placing crushed aggregate base course and signs to construct temporary emergency pullouts. This item also includes the removal of the pullouts including furnishing and placing finishing items as the plans show.

B (Vacant)

C Construction

Dispose of all surplus and unsuitable material as specified in standard spec 205.3.12.

D Measurement

The department will measure Temporary Emergency Pullouts, acceptably completed, by the unit.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
205.3000.S	Temporary Emergency Pullouts	EACH

Payment is full compensation for grading, shaping, and compacting; providing and placing crushed aggregate base course; providing and placing signs; removing as required; and for providing and placing topsoil, fertilizer, seed, and mulch.

stp-205-020 (20080902)

Consult with regional soils engineer before using this STSP and coordinate all blasting activities with the regional soils engineer.

53. stp-205-050 General Requirements for Blasting Rock.

Add the following to standard spec 205.3.7:

Perform all blasting in compliance with the Wisconsin Administrative Code Department of Safety and Professional Services SPS 307.43.

Blasting Plan Submittal

Not less than two weeks before commencing blasting operations, or at any time when changes to the drilling and blasting methods are proposed, submit a Blasting Plan to the engineer for review. The blasting plan shall contain full details of the drilling and blasting patterns and controls proposed for both the controlled and production blasting. Include the following minimum information in the blasting plan:

1. Station limits of proposed shot.
2. Plan and section views of proposed drill pattern including free face, burden, blasthole spacing, blasthole diameters, blasthole angles, lift height, and subdrill depth.
3. Loading diagram showing type and amount of explosives, primers, initiators, and location and depth of stemming.
4. Initiation sequence of blastholes including delay times and delay system.
5. Manufacturer's data sheets for all explosives, primers, and initiators to be employed.

The blasting plan submittal is for quality control and record keeping purposes. Review of the blasting plan by the engineer does not relieve the contractor of responsibility for the accuracy and adequacy of the plan when implemented in the field.

Safety

Immediately notify the engineer of any incidents of fly rock, damage to any personal property, or existing roadway that is open to traffic, and any violations of the Wisconsin Administrative Code Department of Safety and Professional Services SPS 307.43. Failure to do so shall be considered a safety violation under standard spec 107 and all work on the project may be stopped under standard spec 105.1(1).

Notify the engineer of the station, location, and 'size' of all blasts at least one hour before the blast.

Observe the entire blast area for a minimum of five minutes following a blast to guard against rock or debris fall before commencing work in the area.

The engineer has the authority to prohibit or halt the contractor's blasting operations if it is apparent that through the methods being employed, the required slopes are not being obtained in a stable condition, the safety and convenience of the traveling public is being jeopardized, or vibration levels above the allowable levels occur.

Condition Surveys

Conduct and document pre-blast and post-blast surveys of any nearby buildings or structures as required by the scaled-distance equation specified in the Wisconsin Administrative Code Department of Safety and Professional Services SPS 307.43. Make right of entry arrangements with the property owners for these condition surveys. Before any blasting, make the pre-blast survey records available to the engineer for review. After completion of blasting operations, perform a post-blast survey and make these records available to the engineer for review. The contractor shall be responsible for any damage resulting from blasting.

These condition surveys shall consist of visually inspecting and recording all existing defects in the structures before and after blasting operations. Photographs and/or videotape may be used to assist in documentation. Submit a written report to the department detailing the visual and photographic investigation of potentially affected structures. This report will include copies of the pre-blast and post-blast surveys and discuss any discrepancies and findings of these surveys.

If at any time during the progress of the work, the methods of drilling and blasting do not produce the desired result of a uniform slope and shear face, within the tolerances specified, drill, blast, and excavate in short sections, not exceeding 100 feet in length, until a technique is arrived at that will produce the desired results. Extra cost resulting from this requirement shall be borne by the contractor.

Vibration Control and Monitoring

All vibration control and monitoring shall comply with Wisconsin Administrative Code Department of Safety and Professional Services SPS 307.43, Instrumentation and SPS 307.44, Control of Adverse Effects.

Whenever there is a potential for vibration damage to adjacent buildings, structures, or utilities, monitor each blast with an approved seismograph located, as approved, between the blast area and the closest structure subject to blast damage, and as close as practical to the subject structure. Peak particle velocity shall not be allowed to exceed the safe limits of the nearest structure subject to vibration damage.

A vibration specialist, approved by the engineer, shall perform vibration monitoring. The vibration specialist shall monitor vibration levels according to the Wisconsin Administrative Code Department of Safety and Professional Services SPS 307.43 and interpret the seismograph records to ensure that the seismograph data shall be effectively utilized in the control of the blasting operations with respect to the existing structures and utilities.

According to the Wisconsin Administrative Code Department of Safety and Professional Services SPS 307.43 consult with the owner of any structure or utility not listed in SPS 307.43 to establish maximum allowable limits on ground vibrations. In no case shall these vibration limits exceed the following criteria:

Structure Type	Maximum Peak Particle Velocity (inches/second)
Reinforced Concrete, Structures, Unoccupied	4.0
Steel Structures, Unoccupied	4.0
Buried Utilities	2.0
Wells and Aquifers	2.0
Green Concrete (Less than 7 days)	1.0

Furnish data recorded for each shot to the engineer before the next blast; the data shall include the following:

1. Identification of vibration monitoring instrument used.
2. Name of qualified observer and interpreter.
3. Distance and direction of recording station from blast area.
4. Type of ground at recording station and material on which the instrument is sitting.
5. Peak particle velocity and principal frequency in each component.
6. A dated and signed copy of records of seismograph readings.
7. A comparison of measured seismograph readings to maximum allowable readings identified in the Wisconsin Administrative Code Department of Safety and Professional Services SPS 307.43 or as specified in this special provision.

If the recorded vibration data exceeds the allowable levels established in the Wisconsin Administrative Code Department of Safety and Professional Services SPS 307.43 or as specified in this special provision, immediately halt blasting operations. Submit a revised blasting plan to the engineer and do not resume blasting operations until the engineer approves the revised plan.

All costs associated with the work described herein shall be considered included in the bid item Excavation Rock.

stp-205-050 (20141107)

Use to ensure the quality of the foundation preparation where a concrete seal (under a spread footing) or a concrete spread footing will be cast underwater on rock. Location may be a pier footing or abutment.

54. stp-206-050 Underwater Foundation Inspection Enter Location Name, Item 206.1050.S.

A Description

This special provision describes providing underwater inspections of the substructure foundations conforming to standard spec 206.3.12.

B (Vacant)

C Construction

Provide a diver who, under the direction of the engineer, will report the characteristics, cleanliness and quality of the excavated rock surface below the seal or footing to ensure that the foundation has been properly prepared as specified in standard spec 206.3.8.

Provide a video monitor and video camera, along with two-way audio communications with the diver during the inspection and record the video and audio.

Correct any deficiencies in the preparation of the seal or footing foundation and repeat the inspections until all deficiencies are corrected.

Place the seal or footing concrete within 24 hours after all deficiencies are corrected or as the engineer directs.

D Measurement

The department will measure Underwater Foundation Inspection Enter Location Name once for each individual unit, acceptably completed. The entire pier or abutment substructure location is considered a unit. Multiple underwater inspections at the same substructure location to correct foundation preparation deficiencies will not be measured.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
206.1050.S	Underwater Foundation Inspection Enter Location Name	EACH

Payment is full compensation for all diving inspections and reporting; and for supplying video and two-way audio communications equipment and electronic video and audio files.

stp-206-050 (20190618)

208-005 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

This STSP is required when Item 208.1100 Select Borrow is in the proposal.

55. stp-208-005 Select Borrow, Item 208.1100.

Conform to standard spec 208 as modified in this special provision.

Material

Furnish and use material that consists of granular material meeting the following requirements: Enter material requirements.

stp-208-005 (20031103)

56. stp-208-020 Fly Ash for Subgrade Stabilization Furnished, Item 208.2100.S.

A Description

This special provision describes furnishing and protecting fly ash for subgrade stabilization as the engineer directs.

B Materials

Furnish fly ash that complies with the physical requirements of ASTM D-5239 6.4 and the chemical requirements of ASTM C-618, Table 1 for Class C fly ash. The engineer may approve other fly ash materials that do not meet these requirements if the fly ash is determined to be self-cementing, has a sulfur trioxide content that does not exceed 10%, and the required degree of stabilization can be achieved using that fly ash.

Identify all sources of fly ash materials to be used for this work and provide the department with samples for the development of mix design parameters. Deliver samples, weighing at least 50 lbs, of each of the fly ash materials to the Truax Center, 3502 Kinsman Blvd., Madison, WI 53704, or to a site as the engineer directs.

C Construction

Store and handle fly ash in closed weatherproof containers until immediately before distribution.

Furnish the engineer with the weight of each load of fly ash delivered and incorporated into acceptable work on the project. The contractor may furnish an invoice of weight from the supplier, a weight ticket from a certified public scale, or a weight from a standard platform truck scale erected by the contractor at a site approved by the engineer.

D Measurement

The department will measure Fly Ash for Subgrade Stabilization Furnished by the ton of material, furnished and incorporated into acceptable work on the project.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
208.2100.S	Fly Ash for Subgrade Stabilization Furnished	TON

Payment is full compensation for furnishing and protecting the fly ash; and for properly disposing of excess materials.

stp-208-020 (20181119)

57. stp-208-025 Fly Ash for Subgrade Stabilization, Item 208.2110.S.

A Description

This special provision describes stabilizing the prepared subgrade by placing fly ash, mixing it with the subgrade, adjusting moisture content as necessary, compacting the mixture, and trimming, finishing, and curing the subgrade as the plans show and as the engineer directs.

B Materials

B.1 Fly Ash

Use fly ash that complies with the requirements of bid item, Fly Ash for Subgrade Stabilization Furnished.

B.2 Water

Use water for mixing during the stabilization process that complies with the requirements of standard spec 501.3.5.

B.3 Equipment

Before beginning of stabilization operations, have on the project site the machinery, tools, and equipment necessary for proper execution of the work and ensure that the engineer has approved the use of this equipment. Use a machine to blend and mix the fly ash with the subgrade that is capable of reaching a depth of 12 inches in one pass and has a recycling or mixing drum equipped with a water spray bar. The spray bar in the mixing drum shall have adequate volume control to maintain the moisture content of the mixed material within the specified range. Use a vibratory padfoot roller to achieve compaction of the mixed material. Use rubber tired or smooth wheeled rollers only for final finishing of the stabilized section.

C Construction

C.1 General

Stabilize the subgrade to a depth of 12 inches below final grade unless the plans show or engineer directs otherwise. Perform the work in such a manner that produces a completed section of stabilized subgrade that contains a uniform mixture of fly ash and subgrade soil with no loose or segregated areas, has uniform density and moisture content, and is well bound for its full depth. Regulate the sequence of the work, apply fly ash at the required rate, uniformly mix the fly ash and subgrade to the required depth, obtain required moisture and density levels, maintain the work, and rework areas as necessary to meet all specified requirements.

Do not perform fly ash mixing operations when the ground temperature is below 35° F, the air temperature is below 50° F, or there is imminent danger of rain. Do not use fly ash, which has been previously exposed to moisture, in the work. Be responsible for the protection and quality of the fly ash stabilized subgrade under all weather conditions until the completion of the three-day curing period.

The engineer will establish sections to determine compliance with moisture and compaction requirements. For two-lane roadways and for each two-lane directional roadway of divided highways, sections will be approximately 500 linear feet in length. For other multi-lane roadways, sections will be of such length to encompass approximately 25,000 square feet of stabilized area. For each section, the engineer will establish maximum density, optimum moisture content, and allowable moisture range for the soil-fly ash mixture. The engineer may divide the section into subsections for testing purposes and will conduct at least one test for moisture content and density within each section or subsection. The test or tests conducted within each section or subsection will determine compliance for all material within the section or subsection.

C.2 Subgrade Preparation

Before placement of the fly ash, bring the subgrade to the lines and grades the plans show and to a condition that will allow uniform distribution of the fly ash.

C.3 Fly Ash Application

Spread the fly ash evenly on the prepared subgrade at the estimated rate of 135 lb/SY of required stabilized surface area. The engineer will determine the actual application rate. The limits of the stabilized subgrade shall extend to 1 foot beyond the curb line in urban sections and to 1 foot inside of the subgrade shoulder point in rural sections. Do not spread or place fly ash within 1 foot of the established lateral limits

of stabilization. The engineer may adjust the length of the stabilized area the plans show to fit field conditions. Remove all fly ash placed or deposited outside of the stabilized area.

Use necessary methods, procedures, and equipment to minimize fly ash dust during placement and spreading. Do not place fly ash when the engineer determines wind conditions are such that blowing fly ash may become objectionable to adjacent property owners, violate air quality standards, or significantly reduce the amount of fly ash incorporated into the work. If dust resulting from application of fly ash becomes objectionable, the engineer may suspend such application until the contractor presents an acceptable plan to reduce and control dust production.

C.4 Mixing

Begin mixing operations no later than 60 minutes after the beginning of fly ash application unless otherwise approved by the engineer. Thoroughly mix the fly ash and the subgrade soil by the approved equipment until a homogenous, friable mixture of material free from lumps and clods is obtained. Correct non-uniform areas as the engineer directs before completing the mixing.

C.5 Moisture Control

The allowable moisture range for the stabilized subgrade material shall be three percentage points below to two percentage points above the established optimum moisture. Produce a fly ash and soil mixture within the allowable moisture range, and make all necessary moisture adjustments before, or during, mixing.

If the engineer determines that the moisture content of the mixture is below the specified limit, add additional water by using the spray bar in the mixing unit and uniformly blend the water with the mixture. If the engineer determines that the moisture content exceeds the specified limit, add additional fly ash and mix it with the fly ash and soil mixture to lower the mixture's moisture content. Do not aerate the mixed material to lower the water content. Bring the mixed material to uniform moisture content before beginning compaction. The addition of water to increase moisture content, the addition of fly ash to lower the moisture content, and all necessary associated mixing shall be at contractor expense.

C.6 Compaction

Begin compaction immediately after mixing is completed and while the fly ash and soil mixture is determined to be within the specified moisture range. During compaction, sprinkle the subgrade surface with water as necessary to maintain moisture within the specified range. Compact the full depth of the stabilized layer to a minimum of 95 percent of the maximum dry density of the mixture as determined by AASHTO T-99, Method C or Method D and ensure that the stabilized layer remains firm and stable under construction equipment. The moisture content of the stabilized material shall be within the allowable moisture range established by the engineer. The engineer will test each section of subsection after compaction is completed. If the material fails to meet the moisture, density or stability requirements, the engineer may require the contractor to rework the section or subsection as necessary to meet those requirements. In addition, the engineer may suspend stabilization operations until the contractor presents an acceptable plan to obtain the necessary density and stability requirements.

Complete compaction of each established section of the stabilized subgrade within two hours after incorporation of the fly ash. The engineer will reject and require reprocessing of any section or subsection that does not reach required density or stability within the specified time. Reprocessing shall include the addition of fly ash, mixing, compacting, and finishing as required in the initial stabilization. The engineer will determine the amount of fly ash to be added for reprocessing. Complete all reprocessing operations at no expense to the department.

C.7 Finishing and Curing

After satisfactorily compacting the stabilized section, immediately bring the stabilized section to the final lines and grades the plans show. Finish the surface with compaction equipment capable of removing ruts and irregularities. Do not drive or place construction traffic on the stabilized section or place base aggregate dense on it during the first 24 hours after completing compaction. After the stabilized section has been finished as required, protect the surface against rapid drying for a period of not less than three days. During the first 24 hours, spray the section, or lightly sprinkle it with water, to maintain the section in a moist condition. After that time, continue curing the section by spraying or sprinkling it or by covering it with base aggregated dense and maintaining the aggregate in a moist condition. During the three-day cure time, do not apply excessive water that may damage the stability of the subgrade. The engineer may order reprocessing of any area that does not maintain stability or finish until the base course is placed or the work is accepted. Following the stabilization and curing process, the department will limit the

contractor to hauling only legal highway loads over the stabilized area as required in standard spec 108.7.2.

D Measurement

The department will measure Fly Ash Subgrade Stabilization by the square yard of surface area, acceptably treated. No deduction will be made for any manholes, catch basin, or other similar fixtures located within the limits of the stabilized area.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
208.2110.S	Fly Ash Subgrade Stabilization	SY

Payment is full compensation for placing the fly ash; mixing it into the subgrade; adjusting subgrade moisture as necessary; compacting the fly ash and soil mixture; trimming and shaping the stabilized subgrade; furnishing all necessary curing materials performing curing operations; and for properly disposing of excess materials.

stp-208-025 (20181119)

58. stp-209-010 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 40º 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)

Use a separate bid item for each size in the project. For example, use 209.0300.S.01 for Backfill Coarse Aggregate Size No. 1 and use 209.0300.S.02 for Backfill Coarse Aggregate Size No. 2.

59. stp-209-030 Backfill Coarse Aggregate Size No. Enter the size number, Item 209.0300.S.

A Description

This special provision describes furnishing and placing coarse aggregate backfill as the plans show.

B Materials

Provide clean concrete aggregate graded in accordance with the requirements as specified under standard spec 501.2.5.4.5. The soundness and wear requirements are deleted from this material.

C Construction

Construct the coarse aggregates in accordance with standard spec 209.3.

D Measurement

The department will measure Backfill Coarse Aggregate Size No. Enter the size number in volume by the cubic yard in the vehicle.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
209.0300.S	Backfill Coarse Aggregate Size No. Enter the size number	CY

Payment is full compensation for furnishing and installing the aggregate.

stp-209-030 (20161130)

60. stp-211-020 Prepare Foundation for CIR Base Layer Enter Project ID, Item 211.0700.S.

A Description

This special provision describes the preparation of foundation for work required prior to Cold-In-Place Recycling (CIR) in accordance to standard spec 211 and as hereinafter provided.

B (Vacant)

C Construction

After any contract required surface milling, and immediately prior to commencing CIR operations, remove from the roadway, and up to one inch below the milled surface, any vegetation, standing water, loose crack filler, and any other deleterious materials.

D Measurement

The department will measure Prepare Foundation for CIR Pavement as each individual project, 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
211.0700.S	Prepare Foundation for CIR Pavement Enter Project ID	EACH

Replace standard spec 211.5.1 (4) with the following:

(4) Payment is full compensation for brooming and crack fill removal.

The department will pay separately for the following work associated with yielding areas under this item under the following contract items:

- Base Repair for CIR Layer.

stp-211-020 (20191121)

61. stp-211-030 Base Repair for CIR Layer, Item 211.0800.S.

A Description

This special provision describes base repair for Cold In-Place Recycling (CIR) layer in accordance with standard spec 211, and as hereinafter provided.

B (Vacant)

C Construction

After any contract required surface mill, the engineer and contractor shall visually inspect the milled surface for yielding areas.

Yielding areas will then be repaired prior to the CIR process. The identified yielding areas will be excavated to a maximum of 2 feet, repaired with base course, and a minimum of 5 inches of milled and re-laid pavement material or asphaltic surface in the upper layer,

Add the following to standard spec 211.3.5:

Prior to and during the placement of the CIR layer the contractor shall also be responsible for the work covered under this item.

Perform work under this bid item in accordance with standard spec 205.

Remove soft and/or yielding areas of base to a maximum depth of 2-feet. All areas will be documented, and information will be provided to the project engineer. If areas are found after paving operation begin, the project engineer will be notified of locations. Excavated area will be filled and compacted with material that meets the material requirements of standard spec 305 and Base Aggregate Dense 1 ¼-inch, or standard spec 330 and Mill and Relay, or standard spec 465 and Asphaltic Surface.

Do not exceed plan quantity without written approval from the engineer.

D Measurement

The department will measure Base Repair for CIR Layer by the cubic yard, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
211.0800.S	Base Repair for CIR Layer	CY

Payment is full compensation for removing and excavating areas of base to a maximum of 2 feet; required saw cuts; providing, placing, and compacting dense graded base course; milling and relaying pavement; asphaltic surfacing; and traffic control.

stp-211-030 (20200629)

301-020 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Notes to Designer:

1. ***Typically, the timing requirements for records and control charts in STSP 301-010 QMP Base Aggregate is adequate. On some select projects, the region may want to limit the distance between the laboratory and the project site. When laboratory distance is a concern, use STSP 301-020 to supplement the QMP Base Aggregate article.***
2. ***Discuss the planned coordination of project construction inspection with the construction staff before incorporating this special provision in the contract.***
3. ***Using this special provision will likely increase the amount the contractor bids for the Base Aggregate Dense bid items.***

62. stp-301-020 QMP Base Aggregate Lab Location.

Add the following as paragraph 2 to "B.3 Laboratory" of the QMP Base Aggregate special provision:

(2) Locate the QC laboratory for base aggregate placement sample testing within 30 miles of the project.

stp-301-020 (20080902)

305-005 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use when existing shoulder aggregates are to be bladed across pavement removal areas.

63. stp-305-005 Shaping Roadway, Item 305.0502.S.

A Description

This special provision describes blading the existing shoulder aggregates on the prepared foundation across the pavement removal area and shaping and compacting the aggregate as the plans show and conforming to standard spec 305.

B (Vacant)

C (Vacant)

D Measurement

The department will measure Shaping Roadway by the station along the centerline of each roadway.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
305.0502.S	Shaping Roadway	STA

Payment is full compensation for all blading, shaping, and compacting; and for preparing the foundation.

stp-305-005 (20080902)

64. stp-305-010 Hauling Excess Shoulder Material, Item 305.0504.S.

A Description

This special provision describes moving excess suitable shoulder material longitudinally along the roadway to areas of deficiency as the engineer directs.

B (Vacant)

C Construction

After the asphaltic removing or salvaging operation, move the suitable shoulder material, which is in excess after shaping the shoulders to the required cross section, to areas of deficiency as the engineer directs.

D Measurement

The department will measure Hauling Excess Shoulder Material in volume by the cubic yard in the vehicle.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
305.0504.S	Hauling Excess Shoulder Material	CY

Payment is full compensation for loading, hauling, placing, and for compacting the material.

stp-305-010 (20030820)

305-015 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use to require Base Aggregate Dense 3-Inch in lower base layers for projects where crushed stone aggregate sources are readily available. Use with the Base Aggregate Dense 3-Inch standard bid item number 305.0130 or 305.0135.

65. stp-305-015 Base Aggregate Dense 3-Inch for Lower Base Layers.

Replace standard spec 305.2.2.1(2) with the following:

(2) Use 1 1/4-inch base in top 4 or more inches of base. Use 3-inch base in the lower base layers.

(3) Use 3/4-inch base in the top 3 inches of the unpaved portion of shoulders including the foreslopes. Use 3/4-inch base or 1 1/4-inch base elsewhere in shoulders.

stp-305-015 (20080902)

305-020 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use to prohibit Base Aggregate Dense 3-Inch in lower base layers.

66. stp-305-020 Base Aggregate Dense 1 1/4-Inch for Lower Base Layers.

Replace standard spec 305.2.2.1(2) with the following:

(2) Unless the plans or special provisions specify otherwise, do the following:

1. Use 1 1/4-inch base throughout the full base depth.
2. Use 3/4-inch base in the top 3 inches of the unpaved portion of shoulders. Use 3/4-inch base or 1 1/4-inch base elsewhere in shoulders.

stp-305-020 (20080902)

325-001 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use in pulverize and relay contracts for projects requiring more accurate grade and slope control.

67. stp-325-001 Pulverize and Relay.

Replace standard spec 325.3(2) with the following:

(2) Immediately after pulverizing, relay the material with a paver, grader, or both the paver and grader. Use equipment with automatic grade and slope control systems for adjusting the slope through super-elevated curves, transitions, and tangent sections and an averaging device to achieve a smooth profile. If the automatic control systems break down, the contractor may use manual controls for the remainder of that day only.

stp-325-001 (20080902)

68. stp-327-010 Cold In-Place Recycling (CIR) Asphalt Base Layer, Item 327.1000.S; Asphalt Stabilizing Agent, Item 455.0770.S.

A Description

(1) This work consists of the milling, crushing, and screening (as necessary) of the existing HMA pavement to the width and depth specified on the plans. The processed material shall be blended with foamed asphalt stabilizing agent, water, and other additives as necessary, and required by the mix design, for placement and compaction of this mixture in accordance with the plans and specifications.

B Materials

B.1 Reclaimed Asphalt Pavement (RAP) Material

(1) The RAP material shall be milled from the existing roadway and processed in-place.

(2) The RAP shall be free of contamination including base material, aggregate shoulder material, concrete, silt, clay, or other deleterious materials, unless specified in the plan.

(3) Rubberized crack filler, pavement markers, loop wires, fabric, or other materials shall be removed as observed from the roadway during the recycling process. Any residual materials shall be appropriately sized and homogenously blended with the RAP. No rubberized crack filler or fabric piece may have a dimension exceeding a length of 4 inches.

(4) The milled and processed material shall conform to the following gradation:

Sieve Size	Percent Passing
2”	100
1 ½”	98
1”	95 to 100

B.2 Stabilizing Agent

(1) The asphalt stabilizing agent used for CIR Asphalt Base Layer shall be foamed asphalt.

B.2.1 Foamed Asphalt

(1) Foamed asphalt shall be produced with a performance graded asphalt binder; without polymer modification; in accordance with standard spec 455.

(2) Asphalt binder performance grade for foamed asphalt shall be PG 46-34 or PG 52-34. Ensure that the material is furnished by a supplier from the Combined State Binder Group Certified Supplier List.

(3) Asphalt binder shall be sufficiently heated to meet the mix design expansion and half-life criteria; not to exceed 375° F.

(4) Asphalt binder shall produce asphalt foam with a minimum expansion ratio of 8 and half-life of no less than 6 seconds.

B.2.2 Water

(1) Water may be added to the RAP at the milling head and/or in a mixing chamber.

(2) Water added to the RAP, used for foaming asphalt, shall be free of sediment and deleterious materials.

B.3 Mixture Design

(1) The contractor will be responsible for obtaining milled samples and/or cores for the project mix design.

(2) Core samples shall be obtained at a minimum frequency of 0.5 lane-mile. Cores shall be obtained from the area to be recycled including shoulder. Samples obtained by coring should be enough to develop the mix design.

(3) Samples for mix design obtained by milling shall be taken from at least 3 different locations directly from the area to be recycled.

(4) All samples shall represent the entire depth of the layer to be recycled.

(5) Develop and submit a material sampling plan for review and approval a minimum of 5 business days prior to obtaining milled and/or cored samples.

(6) Material sampling prior to receipt of the engineers notice to proceed shall require submittal and approval of an Application/Permit to Work on Highway Right-of-Way (DT1812).

(7) During material sampling operations; contractor insurance will be as specified in standard spec 107; traffic control requirements will be as specified in standard spec 107 and 643; and in the contract special provisions.

(8) Develop and submit a mix design with the optimal asphalt content 10 business days prior to the start of the CIR operation. This will be developed according to AASHTO MP 38-18 and PP 94-18; and additionally, will conform to the requirements listed in B.3. Submit mix design to the engineer and department's Bureau of Technical Services, Materials Management Section, Pavement Unit.

Table B.3 – Minimum Mix Design Requirements

	Test Method	Specification	Criteria
Mix Design Requirements for Foam Asphalt	Gradation of RAP (Sieve Analysis of Aggregates)	AASHTO MP 38-18 and PP 94-18	See Section B.1.(4)
	Bulk Specific Gravity of Compacted Samples		Report Only; Ndes=30
	Maximum Theoretical Specific Gravity		Report Only
	% Air Voids in Compacted Dense and Open Bituminous Paving Mixtures		Report Only
	Tensile Strength (Resistance of Compacted Mixture to Moisture) Dry, psi Ratio (TSR)		 Minimum 45 Minimum 0.60*
	RAP Coating Test	AASHTO T 59	Minimum Good
Foaming Properties	Foamed Asphalt Expansion Ratio	AASHTO MP 38-18 and PP 94-18	Minimum 8.0 Times
	Foamed Asphalt Half-life		Minimum 6.0 Seconds

*0.70 for mix designs requiring the addition of cement.

(9) The mix design shall be used for informational purposes.

(10) The mix design report shall contain the following minimum information:

1. Gradation of RAP.
2. Density, maximum specific gravity, air void content, indirect dry tensile strength, indirect wet (conditioned) tensile strength, and tensile strength ratio at each recycling agent content iteration (minimum of 4; inclusive of recommended moisture and stabilizing contents) and at the recommended moisture and stabilizing agent contents.
3. Recommended water content from the moisture density curve as a percentage of dry RAP.
4. Optimum stabilizing agent content as a percentage of dry RAP.
5. Stabilizing agent designation, PG grading of asphalt binder, supplier name and location, and certified test report.
6. The optimal foaming characteristics of the asphalt stabilizing agent during the mix design process shall be determined at a minimum of using three different percentage of foamed asphalt content, three different temperatures, and water content.
7. RAP coating test results.
8. Any additives that may be used.

B.4 Quality Management Program

B.4.1 Quality Control Plan

(1) Submit a comprehensive written quality control plan, including random numbers, to the engineer no later than 10 business days before beginning CIR activities. Construct the project as the plan provides.

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

1. An organizational chart with names, telephone numbers, current certifications and/or titles, and roles and responsibilities of QC personnel.
2. The process used to disseminate QC information and corrective action efforts to the appropriate persons. Include a list of recipients, the communication process that will be used, and action time frames.
3. A list of suppliers for all stabilizing agents.
4. A list of source locations for all water.
5. An outline for resolving a process control problem. Include responsible personnel, required documentation, and appropriate communication steps.
6. Location of the QC laboratory, retained sample storage, and other documentation.
7. A summary of locations or quantities, selected randomly using ASTM Method D3665, to be tested under this provision.

B.4.2 Pre-CIR Construction Meeting

A minimum of 5 business days prior to the start of CIR construction, hold a pre-CIR construction meeting at a mutually agreed upon time and location. Attendance at the pre-CIR construction meeting is mandatory for the project leader, quality control manager, project inspection and testing staff, all appropriate contractor personnel involved in the sampling, testing, and quality control including subcontractors, and the engineer or designated representatives.

B.4.3 Personnel

(1) Provide HTCP Nuclear Density Technician I or ACT certified technician for performance of field density and field moisture content testing.

(2) Provide HTCP Aggregate Technician I or ACT certified technician for material sampling and sieve analysis.

(3) A Transportation Materials Sampling (TMS) certified technician is allowed for materials sampling.

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

B.4.4 Equipment

(1) Furnish the necessary equipment and supplies for performing quality control testing. Ensure that all testing equipment conforms to the equipment specifications applicable to the required testing methods. The engineer may inspect the measuring and testing devices to confirm both calibration and condition. Calibrate all testing equipment according to the CMM and applicable AASHTO and/or ASTM specifications and maintain a calibration record at the laboratory.

(2) Furnish nuclear gauges from the department's approved product list at:

https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/tools/appr-prod/default.aspx

(3) Ensure that the nuclear gauge manufacturer or an approved calibration service calibrates the gauge the same calendar year it is used on the project. Retain a copy of the calibration certificate with the gauge.

(4) Conform to AASHTO T310 and CMM 8.15 for density testing and gauge monitoring methods.

B.4.5 Quality Control (QC) Testing

(1) Roadway production lots will be defined as 4000 lane feet. Each roadway production lot will consist of two- 2000 lane feet sublots. The contractor will notify the department before sampling.

(2) Gradation samples shall be taken at random location at a minimum frequency of one per lot of production. Gradation samples shall be taken representative of the full recycled depth. Samples may be obtained prior to or after addition of stabilizing agent depending on the type of CIR equipment used in the project. For each sample report the gradation of the material, as determined in accordance with AASHTO T27, for the Number 4 (4.75mm) sieve and larger.

(3) Conduct and report density testing at a minimum frequency of three individual random tests per sublot.

(4) Conduct and report mill depth checks at random location at a minimum frequency of one per sublot.

(5) Measure and report stabilizing agent foaming properties (i.e. half-life and expansion ratio) of each new tanker load from equipment's test nozzle or recycling unit. If the foaming properties do not meet the requirement as specified in B.2.1, take the necessary corrective action by adjusting the temperature of the stabilizing agent and / or foaming water content.

(6) Report stabilizing agent temperature at a minimum of one per each new tanker load.

(7) Report stabilizing agent foamed asphalt expansion ratio and half-life at random locations at a minimum frequency of one per sublot.

(8) Perform startup QC testing (milling depth, stabilizing agent, foaming properties and stabilizing agent application rate) within the first 500 feet at the beginning of each day of production.

(9) Conduct and report moisture content of the finished CIR layer at minimum from three random locations for each day of placement. The three random locations shall represent each day of placement. Moisture content shall be based on the average of the three tests, from each day of placement. This information is used for tracking the curing process.

(10) The contactor shall provide a Daily Inspection Report to the engineer summarizing the: daily beginning and ending stations, applicable mix design, stabilizing agent temperature, stabilizing agent foaming properties, sublot tests (mill depth check, density test, and gradation) locations and values, and lot roadway sample locations. Any adjustments to the application rate of the stabilizing agent, compaction or foaming water shall be reported as stated in section C.1.

B.4.6 Department Testing

B.4.6.1 General

(1) The department will conduct quality verification(QV) testing to validate the quality of the product and independent assurance(IA) testing to evaluate the sampling and testing. The department will provide the contractor with a listing of names and telephone numbers of all QV and IA personnel for the project and provide test results to the contractor within 5 business days after the department obtains the sample.

B.4.6.2 Quality Verification (QV) Testing

(1) The department will have a technician, or ACT working under a technician, perform QV sampling and testing. Department verification testing personnel must meet the same certification level requirements specified in B.4.3 for contractor testing personnel for each test result being verified. The department will notify the contractor before sampling.

(2) The department will conduct random QV tests at the minimum frequency of 10% of the required QC tests. The department will observe the contractor's QC stabilizing agent foaming property test.

(3) The department's mill depth check, roadway gradation sample, and density test sites, will be at locations independent of the contractor's QC work, collecting one sample at each QV location. The department will split each QV gradation sample, test half for QV, and retain the remaining half for 7 calendar days.

(4) The department will verify the contractor's moisture content values by testing a moisture content split sample at a frequency of at least one per day.

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

(6) The department will assess QV results by comparing to the appropriate specification limits. If QV test results conform to this special provision, the department will take no further action. If QV test results are nonconforming, re-evaluation of the entire process must be completed before production can resume.

B.4.6.3 Independent Assurance (IA)

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

1. Split sample testing.
2. Proficiency sample testing.
3. Witnessing sampling and testing.
4. Test equipment calibration checks.
5. Requesting that testing personnel perform additional sampling and testing.

(2) If the department identifies a deficiency, and after further investigation confirms it, correct that deficiency. If the contractor does not correct or fails to cooperate in resolving identified deficiencies, the engineer may suspend placement until action is taken. Resolve disputes as specified in B.4.6.4.

B.4.6.4 Dispute Resolution

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

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

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

C Construction

C.1 General

(1) Unless the contract provides otherwise, keep the road open to traffic during construction.

(2) Perform CIR operations; only between the dates of May 15 and September 15; when the air temperature approximately 3 feet above grade, in the shade, and away from artificial heat sources is above 50°F and when the nighttime ambient air temperature is above 35°F the night prior and following; unless approved otherwise by the engineer.

(3) Do not perform CIR operations during inclement weather; such as rain or fog; that will not allow proper mixing, placing, and/or compacting of the mixture.

(4) CIR operations and recycled pavement base layer curing shall be completed to allow adequate time for placement of surfacing in accordance with calendar requirements of standard spec 450.3.2.1.

(5) The asphalt binder stabilizing agent application rate will be 2.00 percent with a field adjustment tolerance of +/- 0.30 percent. Any changes within the +/- 0.30 percent tolerance from the 2.00 percent application rate will need to be documented with date, time, pavement temperature, location, reason, and new values and communicated to the engineer at the time the change occurs.

(6) The metered water added at the mill used for cooling and compaction shall be 2.00 percent. Any changes within the +/- 0.30 percent tolerance from the 2.00 percent application rate will need to be documented with date, time, pavement temperature, location, reason, and new values and communicated to the engineer at the time the change occurs.

(7) If the stabilizing agent or water application rate from the mix design referenced in section B.3 is not within the range of 1.70 to 2.30 percent, at the departments direction, 500 feet test sections will be required as a comparison. The contractor's liability for the department's directed test sections will be waived. The department's Bureau of Technical Services Pavement Unit will be consulted on these test sections. No test section will be considered below 1.50 percent asphalt binder stabilizing agent.

C.2 Equipment

(1) Equipment used for CIR shall be subject to approval by the engineer.

(2) Tankers supplying hot stabilizing agent components shall be equipped to constantly monitor temperature within the tank.

C.2.1 Milling Machine

(1) The primary milling machines; not inclusive of pre-mill/wedge-cut milling units; shall be capable of milling the existing pavement at a minimum width of not less than 12.5 feet and to the depth shown on the plans, specified in the contract or directed by the engineer. A smaller milling machine may be used to mill paved shoulders and miscellaneous areas to increase the recycle width.

(2) The milling machines shall be equipped with automatic depth control, shall maintain constant cutting depth and width, uniform grade, and uniform slope.

(3) For processes not incorporating additional screening, sizing, or crushing; the milling machine shall be capable of producing RAP sized as specified in B.1.

(4) Use of a heating device to soften the pavement is not permitted.

C.2.2 Screening, Crushing, and Sizing Equipment

(1) Processes requiring additional screening, sizing, or crushing, shall include a unit with a closed circuit system capable of continuously returning oversized material to the crusher until all milled material entering the screening, crushing, or sizing equipment meets the gradation requirements of section B.1.

C.2.3 Mixing Unit

(1) Processed RAP shall be mixed with the stabilizing agent and water in a mixing unit; defined as the milling machine cutter housing, a separate mixing chamber, or a pugmill.

(2) The asphalt stabilizing agent shall be applied; using a computer controlled additive system; uniformly at the predetermined application rate. The metering of the stabilizing agent must be monitored through a calibrated pump providing a continuous readout of quantities.

(3) The additive system shall contain separate pumping systems for adding stabilizing agent and water. Each system shall have an inspection or test nozzle for stabilizing agent and/or water sampling.

(4) The system shall be capable of producing a uniformly mixed homogeneous recycled pavement base layer mixture.

C.2.4 Paving Equipment

(1) The placement and shaping of the recycled pavement base layer mixture shall be completed using a self-propelled paver or screed integral to the recycling equipment meeting the requirements of standard spec 450.3.1.4; revised to exclude the requirement of an activated screed or strike-off assembly.

(2) The screed shall not be heated.

(3) If utilizing a self-propelled paver, the material shall be transferred directly into the paver hopper from the recycling equipment or with a pick-up device. When a pick-up device is used, the entire windrow shall be removed from the milled surface and transferred to the paver hopper.

C.2.5 Compaction Equipment

(1) Compaction equipment shall be self-propelled and meet the requirements of standard spec 450.3.1.5.

(2) The number, weight, and types of rollers shall be used as necessary to achieve the specified compaction. At a minimum, the following rollers shall be used:

1. At least one self-propelled double drum vibratory steel roller with a minimum weight of not less than 10 tons.
2. At least one self–propelled pneumatic-tired roller with a minimum weight of not less than 22 tons.

C.3 Constructing CIR

C.3.1 Preparation

(1) After any contract required surface milling, and immediately prior to commencing CIR operations, remove from the roadway, and up to 1 inch below the milled surface, any vegetation, standing water, loose crack filler, and any other deleterious materials.

(2) Inspect the pavement surface, after any contract required surface milling, for areas of yielding subgrade. Yielding areas will be repaired prior to CIR operations.

(3) Blade the existing base aggregate roadway shoulders away from the asphaltic surface edge to minimize contamination of the CIR base layer.

C.3.2 Processing and Placement of CIR Material

(1) Mill the existing pavement to the required depth and width indicated on the plans.

(2) Further process the milled RAP material as necessary by crushing, screening, and/or sizing to the gradation requirements of B.1.

(3) Blend the RAP material with the mix design specified proportions of stabilizing agent and water; produce a uniform and homogeneous recycled mixture.

(4) Spread the recycled mixture to the grade, elevations, and slopes specified on the plans; avoiding tearing or scarring of the recycled pavement base layer surface.

(5) Ensure proper material transfer, handling, and spreading to prevent material segregation. If segregation does occur behind the paver, the contractor shall take immediate steps to correct the problem. Corrective action may include adjusting the forward speed of the paving operation and adjusting the flow of material to paver. The contractor shall make adjustments until a satisfactory end-product has been obtained, as determined by the engineer.

(6) Longitudinal joints between successive CIR operations shall be overlapped a minimum of 3 inches. Consideration should be given to the amount of stabilizing agent used in the overlapping pass. Adjust the width of the stabilizing agent application so that the overlapped CIR mixtures maintains the target stabilizing agent content. Transverse joints between successive CIR operations during the same day of placement shall be overlapped a minimum of 2 feet. The beginning of each day's recycling operation shall overlap the end of the preceding recycling operation a minimum of 50 feet unless otherwise directed by the engineer.

C.4 Compaction

C.4.1 Control Strip Construction

(1) On the first day of production, construct a control strip to identify the target wet density for the CIR layer using a nuclear moisture-density gauge in backscatter measurement. Nuclear gauge test duration in backscatter measurement shall be for a total of one-minute test per location in the direction of paving. The control strip construction and density testing will occur under the direct observation and/or assistance of the department QV personnel.

(2) Unless the engineer approves otherwise, construct control strips to a minimum dimension of 500 feet long and one full lane width. Begin the control strip at a location of at least 200 feet beyond the start of the project.

(3) Completed control strips may remain in-place to be incorporated into the final roadway cross-section.

(4) Construct additional control strips, at a minimum, when:

1. The CIR layer thickness changes in excess of 2.0 inches.
2. The percent of target wet density is less than 96% or exceeds 105.0%; and is outside the range of the 10 random measurements defining the control strip; on two consecutive sublots.
3. If there is a significant change in mix proportions, weather conditions, compaction equipment's or other controlling factors, the engineer may require construction of new control strips to check target density.

(5) Construct control strips using equipment and methods representative of the operations to be used for constructing the CIR layer.

(6) After compacting the control strip with a minimum of three roller passes, mark and take three wet density measurements using a nuclear moisture-density gauge in backscatter mode at one random station. One density measurement representing the inside 1/3, one density measurement representing the middle 1/3 and one density measurement representing the outside 1/3 transversely across the traveled lane, a minimum of 1 ½ feet from the center of the probe to the unrestricted edge of the CIR layer. Subsequent density measurements will be taken at the same three locations.

(7) After each subsequent pass of compaction equipment over the entirety of the control strip, take wet density measurements at the three marked locations. Continue compacting and testing until the increase in density measurements of individual locations is less than 2.0 lb/ft^3, or the density measurements begin to decrease.

(8) Upon completion of control strip compaction, take 10 randomly located wet density measurements within the limits of the control strip, a minimum of 1 ½ feet from the center of the probe to the

unrestricted edge of the CIR layer. The final measurements recorded at the three locations under article paragraph (6) of this section may be included as 3 of the 10 measurements. Average the 10 measurements to obtain the control strip target density.

C.4.2 Compaction Requirements

(1) Compact the CIR layer to a required density of 96% of the target density. Density acceptance shall be based on the average sublot measurements results.

C.5 Surface Requirements

(1) Prior to placement of the surface treatment, the engineer and contractor shall visually inspect the CIR layer for distresses including, but not limited to raveled areas, rutted areas, areas of excess or deficient stabilizing agent, or deficient surface tolerance areas.

(2) Test the recycled pavement base layer surface at regular intervals, and engineer selected locations, using a 10-foot straightedge or other engineer specified device.

(3) The engineer may direct the repair of surface deviations greater than ½ inch between two surface contact points. High points shall be corrected by rerolling, trimming, milling, or grinding. Depressions may be corrected by having a tack coat applied and be filled with HMA immediately prior to placement of the surface treatment.

(3) Raveled areas, rutted areas, areas of excess or deficient stabilizing agent shall be re-processed or repaired. Reprocessing shall consist of milling, blending of additional stabilizing agent, placement with a paver and compaction with determined rolling patterns as determined by the control strip.

C.6 Maintaining the Work

(1) After compaction is complete, the contractor will determine when the CIR is stable to open to traffic.

(2) After opening to traffic, and prior to placement of the upper layer, the surface of the recycled base shall be maintained in a condition suitable for safe movement of traffic.

(3) The recycled base and shoulders shall be protected and maintained from standing water, deleterious substances, and/or other damage.

(4) Any damage to the recycled base, excluding department directed test sections, shall be repaired by the contractor prior to placement of the upper layer at no additional cost to the department.

C.7 Curing and Surfacing

C.7.1 Curing

(1) Application of a surface treatment or leveling/lower layer of HMA will not be allowed until the moisture content of the CIR layer is not more than 2.50 percent.

(2) If the moisture content of the CIR layer does not reduce to 2.50 percent; the surface treatment may be applied after the change in moisture content is less than 0.30 percentage points for three consecutive calendar days.

(3) The final surfacing or leveling/lower layer shall be placed on the CIR layer within 10 calendar days after the CIR layer is completed and initially achieves allowable moisture content.

(4) The moisture content shall be determined from a sample retrieved over the full-depth of the CIR layer by weighting and drying to a constant weight using an oven at 230° ±9°F. Moisture content testing by nuclear density shall only be used for informational purposes not for acceptance. The department will obtain a sample(s) to verify the contractor's final moisture content values.

C.7.2 Tack Coat

(1) The surface shall be prepared, and tack coat applied meeting the requirements of standard spec 455.3.2.

(2) Tack coat application rate shall be 0.05 to 0.07 gal/SY. The engineer may adjust the tack coat application rate based on surface conditions.

(3) Use only emulsified asphalt material as tack coat specified in standard spec 455.2.5. Paving grade asphaltic tack coat shall not be used.

C.7.3 Surfacing

(1) Surfacing materials, equipment, and construction methods shall be in accordance with the applicable sections of the standard specs or contract special provisions.

D Measurement

(1) The department will measure Cold In-Place Recycling (CIR) Asphalt Base Layer by the square yard, acceptably completed.

(2) The department will measure the Asphalt Stabilizing Agent incorporated into the work by the ton; as metered through a calibrated pump, or through delivered ticket quantity.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
327.1000.S	Cold In-Place Recycling (CIR) Asphalt Base Layer	SY
455.0770.S	Asphalt Stabilizing Agent	TON

(2) Payment is full compensation for measured quantities as specified above; all material including mixing and milling water; equipment necessary for milling and sizing, mixing, paving, compacting the completed CIR; incidentals necessary to the conduct mix design; including sampling and traffic control; mill the existing pavement for recycling, size the milled RAP, inject and mix the RAP with the stabilizing agent, place or pave, compact, and maintain the completed CIR.

(3) The department will pay separately for repair of yielding areas under the bid item Base Repair for CIR Layer.

(4) The department will pay separately for removing or blading away of the adjacent shoulder material under the bid item Shaping Shoulders.

(5) The department will pay separately for preparation under the bid item Prepare Foundation for CIR Base Layer.

(6) The department will pay separately for surfacing treatments, including tack coat, under the appropriate bid items.

stp-327-010 (20200629)

330-001 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use in mill and relay contracts for projects requiring more accurate grade and slope control.

69. stp-330-001 Mill and Relay.

Replace standard spec 330.3(2) with the following:

(2) Immediately after milling, relay the material with a paver, grader, or both a paver and grader. Use equipment with automatic grade and slope control systems for adjusting the slope through super-elevated curves, transitions, and tangent sections and an averaging device to achieve a smooth profile. If the automatic control systems break down, the contractor may use manual controls for the remainder of that day only.

stp-330-001 (20080902)

70. stp-370-010 QMP Base Aggregate Dense 1 1/4-Inch Compaction, Item 371.2000.S.

A Description

(1) This special provision describes modifying the compaction and density testing and documentation requirements of work done under the Base Aggregate Dense 1 1/4-Inch bid items. Conform to standard spec 305 as modified in this special provision and to the contract QMP Base Aggregate article.

(2) Provide and maintain a quality management program. A quality management program is defined as all activities, including process control, inspection, sampling and testing, and necessary adjustments in the process related to construction of dense graded base which meets all the requirements of this provision.

(3) Chapter 8 of the department's construction and materials manual (CMM) provides additional detailed guidance for QMP work and describes sampling and testing procedures.

https://wisconsindot.gov/rdwy/cmm/cm-08-00toc.pdf

(4) This special provision applies to Base Aggregate Dense 1 1/4-Inch material placed: above at least 16 inches of subgrade improvement, 12 inches of subgrade improvement and geogrid or QMP subgrade provisions, between shoulder hinge points and lower than mainline pavement. Unless otherwise specified by the contract, all Base Aggregate Dense 1 1/4-Inch material placed on side roads, private and public entrances, individual ramps less than 1500 feet, passing lanes less than 1500 feet, tapers, turn lanes, and other undefined locations are exempt from the compaction and density requirement modifications and testing contained within this special provision.

B (Vacant)

C Construction

C.1 General

(1) The engineer shall approve the grade before placement of the base. Approval of the grade shall be in accordance with applicable provisions of the standard specifications.

Add the following to standard spec 305.3.2.2:

(3) For 1 1/4-Inch dense graded base composed of < or = 20% reclaimed asphaltic pavement (RAP) or crushed concrete (RCA), as determined by classification of material (aggregate or RAP and/or RCA) and percentage by weight of each material type retained on the No. 4 Sieve, the contractor must determine the material target density in accordance with:

Method 1: Maximum dry density in accordance with AASHTO T-180, Method D, with correction for coarse particles and modified to require determination of Bulk Specific Gravity (Gm) in accordance with AASHTO T 85. Bulk Specific Gravities determined in accordance with standard spec 106.3.4.2.2 for aggregate source approval may be utilized.

(4) For 1 1/4-Inch dense graded base composed of >20% RAP or RCA, as determined by classification of material (aggregate or RAP and/or RCA) and percentage by weight of each material type retained on the No. 4 Sieve, the contractor may choose from the following options to determine the material target density:

Method 2: Maximum dry density as determined by AASHTO T-180, Method D, with correction for coarse particles, and modified to require determination of Bulk Specific Gravity (G_m) in accordance with AASHTO T 85.

Method 3: Maximum wet density as determined by AASHTO T-180, Method D, modified to define *Maximum Density* as the wet density in pounds per cubic foot of soil at optimum moisture content using Method D specified compaction, with correction for coarse particles, and modified to require determination of Bulk Specific Gravity (G_m) in accordance with AASHTO T 85.

Method 4: Average of 10 random control strip wet density measurements as described in section C.2.5.1.

(5) Compact the 1 1/4-Inch dense graded base to a minimum of 93.0% of the material target density for methods 1, 2 and 3. Compact 1 ¼-inch dense graded base to a minimum of 96% of the material target density for method 4. Ensure that adequate moisture is present during placement and compaction operations to prevent segregation and to help achieve compaction.

(6) Base Aggregate Dense 1 1/4-Inch will be accepted for compaction on a lot basis.

(7) Field density tests on materials using contractor elected target density methods 3 or 4 will not be considered for lot acceptance on the basis of compaction under the requirements of this provision until

the moisture content of the in-place material is less than 2.0 percentage points above the maximum wet density optimum moisture or 2.0 percentage points of the average moisture content of the 10 density tests representing a control strip, respectively. Determine moisture content using AASHTO T255 as modified in CMM chapter 8 or a nuclear density gauge. If conducting AASHTO T255, sample materials after watering but before compaction.

C.2 Quality Management Program

C.2.1 Quality Control Plan

(1) Submit a comprehensive written quality control plan to the engineer no later than 10 business days before placement of material. Do not place any dense graded base before the engineer reviews and accepts the plan. Construct the project as the plan provides.

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

1. An organizational chart with names, telephone numbers, current certifications and/or titles, and roles and responsibilities of QC personnel.
2. The process used to disseminate QC information and corrective action efforts to the appropriate persons. Include a list of recipients, the communication process that will be used, and action time frames.
3. A list of source locations, section and quarter descriptions, for all aggregate materials requiring QC testing.
4. Descriptions of stockpiling and hauling methods.
5. An outline for resolving a process control problem. Include responsible personnel, required documentation, and appropriate communication steps.
6. Location of the QC laboratory, retained sample storage, and other documentation.
7. Lot layout and random test location plan.
8. A description of placement methods and operations. Including, but not limited to: staging, construction of an initial working platform, lift thicknesses, and equipment.

C.2.1 Pre-Placement Meeting

A minimum of two weeks before placement of Base Aggregate Dense 1 1/4-Inch material, hold a pre-placement meeting at a mutually agreed upon time and location. Present the Quality Control Plan at the meeting. Attendance at the pre-placement meeting is mandatory for the project superintendent, quality control manager, project inspection and testing staff, all appropriate contractor personnel involved in the sampling, testing, and quality control including subcontractors, and the engineer or designated representatives.

C.2.2 Personnel

(1) Perform the quality control sampling, testing, and documentation required under this provision using technicians certified by the Department's Highway Technician Certification Program (HTCP). Have a HTCP Nuclear Density Technician I, or ACT certified technician, perform field density and field moisture content testing. Adhere to the minimum required certifications for aggregate testing per part 7 of the standard specification. AASHTO T180 proctor testing requires a minimum certification level of AGGTEC-1.

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

C.2.3 Equipment

(1) Furnish the necessary equipment and supplies for performing quality control testing. Ensure that all testing equipment conforms to the equipment specifications applicable to the required testing methods. The engineer may inspect the measuring and testing devices to confirm both calibration and condition. Calibrate all testing equipment according to the CMM and maintain a calibration record at the laboratory.

(2) Furnish nuclear gauges from the department's approved product list at:

http://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/tools/appr-prod/default.aspx

(3) Ensure that the nuclear gauge manufacturer or an approved calibration service calibrates the gauge the same calendar year it is used on the project. Retain a copy of the calibration certificate with the gauge.

(4) For all target density methods, conform to AASHTO T310 and CMM 8-15 for wet density testing and gauge monitoring methods.

(5) For the specified target density determined using method 1 in section C.1, compute the dry densities for the compacted dense graded base, composed of < or = 20% RAP or RCA, according to AASHTO T310.

(6) For contractor elected target density method 2 in section C.1, compute dry densities of dense graded base composed of >20% RAP or RCA using a moisture correction factor and the nuclear wet density value. Determine the moisture correction value, for each Proctor produced under the requirements of C.2.5, using the moisture bias as shown in CMM 8.15.12.1 and 8.15.12.2, except the one-point Proctor tests of the 5 random tests is not required. Conduct a moisture bias test for every 7500 feet of Base Aggregate Dense 1 1/4-Inch placed. Determine natural moistures in the laboratory.

(7) Perform nuclear gauge measurements using gamma radiation in the backscatter or direct transmission position. Backscatter may be used only if the material being tested cannot reliably maintain an undistorted direct transmission test hole. Direct transmission tests must be performed at the greatest possible probe depth of 2 inches, 4 inches, or 6 inches, but not to exceed the depth of the compacted layer being tested. Perform each test for at least one minute of nuclear gauge count time.

C.2.5 Contractor Testing

(1) Perform compaction testing on the mainline dense graded base material, as defined by A.(4). Perform the quality control sampling, testing, and documentation required under this provision using HTCP certified technicians as required in C.2.3. Conform to CMM 8-15 for testing and gauge monitoring methods.

(2) Select test sites randomly using ASTM Method D3665. Random numbers may be determined using an electronic random number generator. Guidance for determining test locations can be found in section 8-30.9 of the Construction and Materials Manual (CMM). Test locations must be kept a minimum of 3 feet from the unsupported edge of dense graded base layers.

(3) When a density target is determined in accordance methods 3 or 4 in section C.1, conduct density testing on same date of final compaction.

C.2.5.1 Contractor Required Quality Control (QC) Testing

(1) Conduct testing at a minimum frequency of one test per lot. A lot is 1500 feet for each layer with a maximum width of 18 feet and minimum lift thickness of 2" of Base Aggregate Dense 1 1/4-Inch material placed. Layer widths exceeding 18 feet are divided into equal lots. Each lot of compacted Base Aggregate Dense 1 1/4-Inch material, as defined by A.(4), will be accepted when the lot field density meets the required minimum density. Lots that don't achieve density requirements must be addressed and approved in accordance with C.2.7.

(2) Add separate lots for passing lanes and individual ramps greater than 1500 feet.

(3) Combine partial lots less than 750 feet with the previous lot. Partial lots greater than or equal to 750 feet are standalone lots.

(4) Notify the engineer, if a lot field density test falls below the required minimum value. Document and perform corrective actions in accordance with C.2.7. Deliver documentation of all compaction testing results to the engineer at the time of testing.

C.2.5.1.1 Target Density Determination

C.2.4.1.1.1 Maximum Wet and/or Dry Density Methods

(1) For contractor elected target density methods 2 and 3 in section C.1, and contractually specified target density method 1 in section C.1; perform one gradation and 5-point Proctor test before placement of 1 ¼-Inch dense graded base. Perform additional gradations every 3000 tons in accordance with standard spec 305 and 730. If sampling requirements are identical, samples/testing performed for the QMP Base Aggregate specification may be used to fulfill the gradation testing requirements of this specification.

(2) Perform additional 5-point Proctor tests, at a minimum, when:

1. The four point moving average gradation on any one sieve differs from the original gradation test result for that sieve, by more than 10 percentage points. The original gradation test is defined as the gradation of the material used to create a 5-point Proctor. Each 5-point Proctor test will remain valid for any material with gradation for all sieves within 10.0 percentage points of that Proctor's original gradation test.
2. The source of base aggregate changes.
3. Percent target density exceeds 103.0% on two consecutive density tests.

(3) Provide Proctor test results to the engineer within two business days of sampling. Provide gradation test results to the engineer within one business day of sampling.

(4) Split each contractor QC Proctor sample and identify it according to CMM 8-30. Deliver the split to the engineer within one business day for department QV Proctor testing.

(5) Split each non-Proctor contractor QC sample and identify it according to CMM 8-30. Retain the split for 7 calendar days in a dry, protected location. If requested for department comparison testing, deliver the split to the engineer within one business day.

C.2.5.1.1.2 Density Control Strip Method

(1) For contractor elected target density method 4 in section C.1, construct a control strip for each layer of placement to identify the target wet density for the base aggregate dense material. The control strip construction and density testing will occur under the direct observation and/or assistance of the department QV personnel. For blended material, reprocessed material and crushed concrete, perform additional gradations every 3000 tons in accordance with standard spec 305 and 730. If sampling frequencies are identical, samples/testing performed for the QMP Base Aggregate specification may be used to fulfill the gradation testing requirements of this specification.

(2) Unless the engineer approves otherwise, construct control strips to a minimum dimension of 300 feet long and one full lane width.

(3) Completed control strips may remain in-place to be incorporated into the final roadway cross-section.

(4) Construct additional control strips, at a minimum, when:

1. The source of base aggregate changes.
2. The four point moving average percentage of blended recycled materials, from classification of material retained on the No. 4 sieve in the original gradation test, differs by more than 10 percentage points. The original gradation test is defined as the gradation of the material used to construct the control strip.
3. The layer thickness changes more than 2.0 inches.
4. The percent target density exceeds 103.0% on two consecutive density measurements.

(5) Construct control strips using equipment and methods representative of the operations to be used to place and compact the remaining 1 1/4–Inch Base Aggregate Dense material. Wet the base, as mutually agreed upon by the contractor and engineer, to obtain and/or maintain adequate moisture content to ensure proper compaction. Discontinue water placement if the base begins to exhibit signs of saturation or instability.

(6) After compacting the control strip with a minimum of 2 passes, mark and take density measurements at 3 random locations. Subsequent density measurements will be taken at the same 3 locations. Test locations must be kept a minimum of 3 feet from the unsupported edge of dense graded base layers.

(7) After each subsequent pass of compaction equipment over the entirety of the control strip, take wet density measurements at the 3 marked locations. Continue compacting and testing until the increase in wet density measurements are less than 2.0 lb/ft^3, or the density measurements begin to decrease.

(8) Upon completion of control strip compaction, take 10 randomly located wet density measurements within the limits of the control strip. The final measurements recorded at the 3 locations under article C.2.4.1.1.2 may be included as 3 of the 10 measurements. Average the ten measurements to obtain the control strip target density and target moisture for use in contractor elected method 4 in section C.1. Test locations must be kept a minimum of 3 feet from the unsupported edge of dense graded base layers.

C.2.6 Department Testing

C.2.6.1 General

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

(2) When a density target is determined in accordance methods 3 and 4 in section C.1, conduct density testing on same date of final compaction.

C.2.6.2 Quality Verification (QV) Testing

(1) The department will have an HTCP technician, or ACT working under a certified technician, perform QV sampling and testing. Department verification testing personnel must meet the same certification level

requirements specified in C.2.3 for contractor testing personnel for each test result being verified. The department will notify the contractor before sampling so the contractor can observe QV sampling.

(2) The department will conduct QV tests at the minimum frequency of 20% of the required gradation, density and Proctor contractor tests.

(3) The department will utilize contractor's QC Proctor results for determination of the material target density. The department will verify QC Proctor values by testing QC Proctor split sample. The department will use QC Proctor value as a target density if the QC and QV Proctor test results meet the tolerance requirements specified in section C.2.6.2(7).

(4) The department will locate gradation and nuclear density test samples, at locations independent of the contractor's QC work, collecting one sample at each QV location. Sampling for gradation may be done independently of nuclear density tests, before watering and before compacting. The department will split each QV sample, test half for QV, and retain the remaining half for 10 calendar days.

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

(6) The department will utilize control strip target density testing results in lieu of QV Proctor sampling and testing when the contractor elected target density method 4 in section C.1 is used.

(7) The department will assess QV results by comparing to the appropriate specification limits. If QV test results conform to this special provision, the department will take no further action. If QV test results are nonconforming, take corrective actions in accordance with C.2.7 until the requirements of this special provision are met. Differing QC and QV nuclear density values of more than 2.0 pcf will be investigated and resolved. Differing QC and QV Proctor values of more than 3.0 pcf will be investigated and resolved.

C.2.6.3 Independent Assurance (IA)

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

1. Split sample testing.
2. Proficiency sample testing.
3. Witnessing sampling and testing.
4. Test equipment calibration checks.
5. Requesting that testing personnel perform additional sampling and testing.

(2) If the department identifies a deficiency, and after further investigation confirms it, correct that deficiency. If the contractor does not correct or fails to cooperate in resolving identified deficiencies, the engineer may suspend placement until action is taken. Resolve disputes as specified in C.2.6.4.

C.2.6.4 Dispute Resolution

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

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

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

C.2.7 Corrective Action

(1) Lots not achieving the minimum density requirements may be addressed and accepted for compaction in accordance with the requirements of this section. Unless directed by the engineer, corrective actions

taken to address an unacceptable lot must be applied to the entire lot corresponding to the non-conforming test.

(2) Investigate the moisture content of material in an unacceptable lot. Moisture content testing/samples collected under the QC and/or QV testing articles of this specification may be used to complete this investigation. Obtain moisture content readings in accordance with ASTM D 6938. For material composed of >20% RAP or RCA, correct the moisture content with the moisture correction value using the moisture bias, as shown in CMM 8.15.12.1 and 8.15.12.2, except the one-point Proctor tests of the 5 random tests is not required.

(3) Lots with moisture contents within 2.0 percentage points of optimum moisture for target density methods 1, 2 and 3 in section C.1, or within 2.0 percentage points of the target moisture content for target density method 4 in section C.1, and exhibiting no signs of deflection when subjected to loading by the heaviest roller used in the placement and compaction operations, shall be compacted a minimum of one more pass using equipment and methods representative of the operations used to place and compact the Base Aggregate Dense 1 1/4–Inch, and density tested at the same location (station and offset) as the failing QC and/or QV density tests. If the change in density exceeds 2.0 lb/ft^3 continue subsequent compactive efforts and density testing on that lot, at no additional cost to the department. If the change in density is less than or equal to 2.0 lb/ft^3, the lot is accepted as satisfying the compaction requirements of this provision.

(4) Lots with moisture contents within 2.0 percentage points of optimum moisture for target density methods 1, 2, or 3 in section C.1, or within 2.0 percentage points of the target moisture content for target density method 4 in section C.1 and exhibiting signs of deflection when subjected to loading by the heaviest roller used in the placement and compaction operations, will be reviewed by the engineer. The engineer may request subgrade improvement methods, such as excavation below subgrade (EBS), installation of geotextile fabrics, installation of breaker run material, or others to be completed, or may request an additional pass of compactive effort using equipment and methods representative of the operations used to place and compact the base aggregate dense and density test.

1. If, after an additional pass, the change in density at the same location (station and offset) as the failing QC and/or QV density tests exceeds 2.0 lb/ft^3 in a lot continue subsequent compactive efforts and density testing on that lot. If the change in density at the same location (station and offset) as the failing QC and/or QV density tests is less than or equal to 2.0 lb/ft^3, and subgrade improvement methods are not requested by the engineer, the lot is accepted as satisfying the compaction requirements of this provision.
2. If subgrade improvement methods are requested by the engineer, upon completion, including compaction of the restored base material, conduct a density test within the improved subgrade limits. This density test result will replace the prior field density value. If the lot field density equals or exceeds the minimum density requirement defined in section C.1, the lot is accepted as satisfying the compaction requirements of this provision. If the lot field density fails to achieve the minimum density requirement defined in section C.1, compact the lot a minimum of one more pass using equipment and methods representative of the operations used to place and compact the base aggregate dense; and density test at the same location (station and offset) as the failing QC and/or QV density tests. If the change in density exceeds 2.0 lb/ft^3 continue subsequent compactive efforts and density testing on that lot, at no additional cost to the department. If the change in density is less than or equal to 2.0 lb/ft^3, the lot is accepted as satisfying the compaction requirements of this provision.

(5) Unacceptable lots, with moisture contents in excess of 2.0 percentage points above or below optimum moisture for target density methods 1, 2 or 3 in section C.1; or in excess of 2.0 percentage points above or below the target moisture content for target density method 4 in section C.1; shall receive contractor performed and documented corrective action; including additional density testing.

(6) Density tests completed subsequent to any corrective action will replace previous field density test results for that lot. Continue corrective actions until the minimum density requirement is achieved or an alternate compaction acceptance criteria is met in accordance with this section.

(7) Field moisture contents of materials tested using contractor elected target density methods 3 or 4 in section C.1 cannot exceed 2.0 percentage points of the optimum moisture content or 2.0 percentage points of the target moisture content, respectively. Density tests on materials using contractor elected target density methods 3 or 4 in section C.1 will not be considered for lot compaction acceptance until the moisture content of the corresponding density test of the in-place material is less than 2.0 percentage points above of the optimum moisture content or 2.0 percentage points of the target moisture content, respectively.

D Measurement

(1) The department will measure the QMP Base Aggregate Dense 1 1/4-Inch Compaction bid item by each lot, acceptably completed per C.2.5.1.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
371.2000.S	QMP Base Aggregate Dense 1 1/4-Inch Compaction	EACH

(2) Payment is full compensation for performing compaction testing; for sampling and laboratory testing; and for developing, completing, and documenting the compaction quality management program. The department will pay separately for providing aggregate under the Base Aggregate Dense 1 1/4-Inch bid item.

(3) The department will pay for additional tests directed by the engineer. One engineer directed test is equal to one acceptably completed lot of the QMP Base Aggregate Dense 1 1/4 -Inch Compaction bid item. The department will not pay for additional corrective action tests required due to unacceptable material.

stp-370-010 (20191121)

71. stp-370-020 QMP Mill and Relay Compaction, Item 374.1010.S; QMP Pulverize and Relay Compaction, Item 374.1020.S.

A Description

(1) This special provision describes modifying the compaction and density testing documentation requirements of work done under the Mill and Relay Pavement and Pulverize and Relay bid items. Conform to standard spec 325 and 330 as modified in this special provision.

(2) Provide and maintain a quality management program. A quality management program is defined as all activities, including process control, inspection, sampling and testing, and necessary adjustments in the process related to construction of a milled and re-laid and pulverized and re-laid base which meets all the requirements of this provision.

(3) Chapter 8 of the department's Construction and Materials Manual (CMM) provides additional detailed guidance for QMP work and describes sampling and testing procedures. The contractor may obtain the CMM from the department's web site at:

https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/rdwy/default.aspx

(4) This special provision applies to Mill and Relay and Pulverize and Relay material placed on both the mainline traveled way and its adjacent mainline shoulders according to the typical finished sections. Unless otherwise specified by the contract, all Mill and Relay and Pulverize and Relay material placed on side roads, private and public entrances, ramps, tapers, turn lanes, and other locations not described as the mainline traveled way and its adjacent mainline shoulders is exempt from the compaction and density requirement modifications and testing contained within this special provision.

B (Vacant)

C Construction

C.1 General

Replace paragraph (4) of standard spec 325.3 and standard spec 330.3 with the following:

(4) Re-laid material will be accepted for compaction on a target density lot basis. Compact the re-laid material to a minimum of 93.0% of the material target density. Ensure that adequate moisture is present during placement and compaction operations to prevent segregation and to help achieve compaction.

The material target density will be identified using the average of 10 random control strip wet density measurements as described in section C.2.5.1.

Field density tests will not be considered for lot acceptance on the basis of compaction under the requirements of this provision until the moisture content of the in-place material is within -2.0 or +4.0 percentage points of the average moisture content of the 10 density tests representing a control strip.

C.2 Quality Management Program

C.2.1 Quality Control Plan

(1) Submit a comprehensive written quality control plan to the engineer no later than 10 business days before placement of material. Do not construct any re-laid base before the engineer reviews and accepts the plan. Construct the project as the plan provides.

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

1. An organizational chart with names, telephone numbers, current certifications and/or titles, and roles and responsibilities of QC personnel.
2. The process used to disseminate QC information and corrective action efforts to the appropriate persons. Include a list of recipients, the communication process that will be used, and action time frames.
3. An outline for resolving a process control problem. Include responsible personnel, required documentation, and appropriate communication steps.
4. Location of the QC laboratory, retained sample storage, and other documentation.
5. A summary of the locations and calculated quantities to be tested under this provision.

6. A description of placement methods and operations. Including, but not limited to: staging, construction of an initial working platform, lift thicknesses, and equipment.

C.2.2 Pre-Placement Meeting

(1) A minimum of two weeks before the start of placement of material, hold a pre-placement meeting at a mutually agreed upon time and location. Present the Quality Control Plan at the meeting. Attendance at the pre-placement meeting is mandatory for the project superintendent, quality control manager, project inspection and testing staff, all appropriate contractor personnel involved in the sampling, testing, and quality control including subcontractors, and the engineer or designated representatives.

C.2.3 Personnel

(1) Perform the quality control sampling, testing, and documentation required under this provision using technicians certified by the Department's Highway Technician Certification Program (HTCP). Have a HTCP Nuclear Density Technician I, or ACT certified technician, perform field density and field moisture content testing.

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

C.2.4 Equipment

(1) Furnish the necessary equipment and supplies for performing quality control testing. Ensure that all testing equipment conforms to the equipment specifications applicable to the required testing methods. The engineer may inspect the measuring and testing devices to confirm both calibration and condition. Calibrate all testing equipment according to the CMM and maintain a calibration record at the laboratory.

(2) Furnish nuclear gauges from the department's approved product list at:

https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/tools/appr-prod/default.aspx

(3) Ensure that the nuclear gauge manufacturer or an approved calibration service calibrates the gauge the same calendar year it is used on the project. Retain a copy of the calibration certificate with the gauge.

(4) Conform to ASTM D 6938 and CMM 8.15 for density testing and gauge monitoring methods. Determine the moisture correction value as shown in CMM 8.15, except the one-point Proctor tests of the 5 random tests is not required. Determine natural moistures in the laboratory.

(6) Perform nuclear gauge measurements using gamma radiation in the backscatter or direct transmission position. Backscatter may be used only if the material being tested cannot reliably maintain an undistorted direct transmission test hole. Direct transmission tests must be performed at the greatest possible probe depth of 2 inches, 4 inches, or 6 inches; not to exceed the depth of the compacted layer being tested. Perform each test for 4 minutes of nuclear gauge count time.

C.2.5 Contractor Testing

(1) Perform compaction testing on the mainline re-laid material, as defined in section A paragraph (4). Perform the quality control sampling, testing, and documentation required under this provision using HTCP certified technicians as required in C.2.3.

(2) Select test sites randomly using ASTM Method D3665. Do not test less than 1 ½ feet from the unsupported edge of the base layer.

C.2.5.1 Contractor Required Quality Control (QC) Testing

(1) Conduct testing at a minimum frequency of one test per lot. A lot will consist of each 3000 SY, for each layer with a minimum lift thickness of 2", of Milled and Pulverized material re-laid, regardless of location. Each lot of in-place mainline re-laid material will be accepted for compaction when the lot field density meets the required minimum 93.0% of target density. Lots that don't achieve 93.0% of target density must be addressed and approved in accordance with C.2.7.

(2) Notify the engineer, if a lot field density test falls below the required minimum value. Document and perform corrective action in accordance with C.2.7. Deliver documentation of all compaction testing results to the engineer at the time of testing.

C.2.5.1.1 Target Density Determination

(1) Construct a control strip to identify the target wet density for the re-laid material. The control strip construction and density testing will occur under the direct observation and/or assistance of the department QV personnel.

(2) Unless the Engineer approves otherwise, construct control strips to a minimum dimension of 300 feet long and one full lane width.

(3) Completed control strips may remain in-place to be incorporated into the final roadway cross-section.

(4) Construct additional control strips, at a minimum, when:

1. The final layer thickness changes in excess of 2.0 inches.
2. The percent of target density is less than 90% or exceeds 105.0%; and is outside the range of the 10 random measurements defining the control strip; on three consecutive density measurements.

(9) Construct control strips using equipments and methods representative of the operations to be used to relay and compact the Milled and/or Pulverized material. Wet the base, as mutually agreed upon by the contractor and engineer, to obtain and/or maintain adequate moisture content to ensure proper compaction. Discontinue water placement if the base begins to exhibit signs of saturation or instability.

(10) After compacting the control strip with a minimum of 2 passes, mark and take density measurements at 3 random locations, at least 1 ½ feet from the edge of the base. Subsequent density measurements will be taken at the same 3 locations.

(11) After each subsequent pass of compaction equipment over the entirety of the control strip, take density measurements at the 3 marked locations. Continue compacting and testing until the increase in density measurements is less than 2.0 lb/ft^3, or the density measurements begin to decrease.

(12) Upon completion of control strip compaction, take 10 randomly located density measurements within the limits of the control strip, at least 1 ½ feet from the edge of the base. The final measurements recorded at the 3 locations under article paragraph (6) of this section may be included as 3 of the 10 measurements. Average the 10 measurements to obtain the control strip target density and target moisture.

C.2.5.2 Optional Contractor Assurance (CA) Testing

(1) CA Testing is optional and is conducted to further validate QC testing. The contractor may submit recorded CA data to provide additional information for the following:

1. Process control decisions.
2. Troubleshooting possible sampling, splitting, or equipment problems.

C.2.6 Department Testing

C.2.6.1 General

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

C.2.6.2 Quality Verification (QV) Testing

(1) The department will have an HTCP technician, or ACT working under a certified technician, perform QV sampling and testing. Department verification testing personnel must meet the same certification level requirements specified in C.2.3 for contractor testing personnel for each test result being verified. The department will notify the contractor before sampling so the contractor can observe QV sampling.

(2) The department will conduct QV tests at the minimum frequency of 30% of the contractor required density tests.

(3) The department will locate nuclear density test locations independent of the contractor's QC work, collecting one test at each QV location.

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

(5) The department will utilize contractor control strip target density testing results for determination of the material target density.

(6) The department will assess QV test results by comparing to the appropriate specification limits. If QV test results conform to this special provision, the department will take no further action. If QV test results are nonconforming, take corrective actions in accordance with C.2.7 until the requirements of this special

provision are met. Differing QC and QV nuclear density values of more than 2.0 pcf will be investigated and resolved.

C.2.6.3 Independent Assurance (IA)

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

1. Split sample testing.
2. Proficiency sample testing.
3. Witnessing sampling and testing.
4. Test equipment calibration checks.
5. Requesting that testing personnel perform additional sampling and testing.

(2) If the department identifies a deficiency, and after further investigation confirms it, correct that deficiency. If the contractor does not correct or fails to cooperate in resolving identified deficiencies, the engineer may suspend placement until action is taken. Resolve disputes as specified in C.2.6.4.

C.2.6.4 Dispute Resolution

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

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

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

C.2.7 Corrective Action

(1) Lots not achieving 93.0% of target density may be addressed and accepted for compaction in accordance with the requirements of this section. Unless otherwise stated, the actions taken to address an unacceptable lot must be applied to the entire lot.

Passing CA test results in accordance with section C.2.5.2, will reduce the limits of lot investigations and/or corrective actions.

(2) Investigate the moisture content of material in an unacceptable lot. Moisture content testing/samples collected under the QC and/or QV testing articles of this specification may be used to complete this investigation. Obtain moisture content readings in accordance with ASTM D 6938. Correct the moisture content with the moisture correction value using the moisture bias, as shown in CMM 8.15, except the one-point Proctor tests of the 5 random tests is not required.

(3) Lots with moisture contents within -2.0 or +4.0 percentage points of the target moisture content for the control strip, and exhibiting no signs of deflection when subjected to loading by the heaviest roller used in the placement and compaction operations, shall be compacted a minimum of one more pass using equipment and methods representative of the operations used to mill or pulverize and relay the material; and density tested at the same location (station and offset) as the failing QC and/or QV density tests. If the change in density exceeds 2.0 lb/ft^3 continue subsequent compactive efforts and density testing on that lot, at no additional cost to the department. If the change in density is less than or equal to 2.0 lb/ft^3, the lot is accepted as satisfying the compaction requirements of this provision.

(4) Lots with moisture contents within -2.0 or +4.0 percentage points of the target moisture content for the control strip, and exhibiting signs of deflection when subjected to loading by the heaviest roller used in the placement and compaction operations, will be reviewed by the engineer. The engineer may request subgrade improvement methods, such as excavation below subgrade (EBS), installation of geotextile

fabrics, installation of breaker run material or others to be completed as specified in standard spec 301.5; or may request an additional pass of compactive effort using equipment and methods representative of the operations used to mill or pulverize, relay, and compact the base and density test.

1. If, after an additional pass, the change in density at the same location (station and offset) as the failing QC and/or QV density tests exceeds 2.0 lb/ft^3 in a lot continue subsequent compactive efforts and density testing on that lot. If the change in density at the same location (station and offset) as the failing QC and/or QV density tests is less than or equal to 2.0 lb/ft^3, and subgrade improvement methods are not requested by the engineer, the lot is accepted as satisfying the compaction requirements of this provision.
2. If subgrade improvement methods are requested by the engineer, upon completion, including compaction of the restored base material, conduct a density test within the improved subgrade limits. This density test result will replace the prior field density value. If the lot field density equals or exceeds 93.0% of target density the lot is accepted as satisfying the compaction requirements of this provision. If the lot field density fails to achieve 93.0% of target density, compact the lot a minimum of one more pass using equipment and methods representative of the operations used to mill or pulverize, relay, and compact the base; and density test at the same location (station and offset) as the failing QC and/or QV density tests. If the change in density exceeds 2.0 lb/ft^3 continue subsequent compactive efforts and density testing on that lot, at no additional cost to the department. If the change in density is less than or equal to 2.0 lb/ft^3, the lot is accepted as satisfying the compaction requirements of this provision.

(5) Lots with moisture contents not within -2.0 or +4.0 percentage points of the target moisture content for the control strip shall receive contractor performed and documented corrective action, including additional density testing.

(6) Density tests completed subsequent to any corrective action will replace previous field density test results for that lot. Continue corrective actions until 93.0% of target density is achieved or an alternate compaction acceptance criteria is met in accordance with this section.

D Measurement

(1) The department will measure QMP Mill and Relay Compaction and QMP Pulverize and Relay Compaction by the square yard, acceptably completed.

(2) The measured square yard of QMP Mill and Relay Compaction and QMP Pulverize and Relay Compaction equals the square yard of Mill and Relay and/or Pulverize and Relay, acceptably completed, regardless of material location, density testing eligibility, or number of lifts with which it is completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
374.1010.S	QMP Mill and Relay Compaction	SY
374.1020.S	QMP Pulverize and Relay Compaction	SY

(3) Payment is full compensation for performing compaction testing; for sampling and laboratory testing; and for developing, completing, and documenting the compaction quality management program. The department will pay separately for Milling and Relaying or Pulverizing and Relaying material under the appropriate bid item.

stp-370-020 (20180628)

405-020 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP and the Coloring Concrete Custom standard spec bid item to specify a custom color for full depth colored concrete. If more than one custom color is required under the contract, use one special provision with more than one Coloring Concrete Custom standard spec bid item distinguished by their supplemental descriptions.

Modify the provision by filling in the fields for the following:

1. ***Color Name:*** ***Specify a name for the color. Use a prefix to indicate the agency specifying the color (Wausau Limestone, NER green, etc.).***

   Do not use WisDOT because that prefix is reserved for standard colors used state-wide. Currently there is only one state-wide color "WisDOT Red".

2. ***Pigment:*** ***Specify a non-fading pigment conforming to ASTM C979.***

3. ***Dosage:*** ***Specify the minimum dosage of pigment as a percent by weight of the total cementitious material (portland + fly ash + slag) in the concrete mix.***

4. ***Federal Color Designation Number:*** ***Specify the 5 digit color number that most closely approximates the desired color. Online color plates are available at:***

   http://www.federalstandardcolor.com/

5. ***Location of Comparison Sample:*** ***Specify where the contractor needs to go to contractually color match their material to a colored concrete sample.***

Add other project-specific requirements not covered under standard spec 405. Do not modify payment to make other work incidental to this item. The department may or may not participate in the costs for "architectural enhancements" but will participate in the costs for the concrete component being colored.

72. stp-405-020 Coloring Concrete Custom, Item 405.0200.

This special provision describes coloring concrete [color name] for incorporation full-depth in work constructed under other contract bid items. Conform to standard spec 405 as modified in this special provision.

Replace standard spec 405.2.1.1(1) with the following:

(1) Integrally color concrete using non-fading pigments conforming to ASTM C979.

- For [color name]: use synthetic [pigment] at a loading of [dosage] percent or more by weight of total cementitious material in the mix. Match the concrete color in reasonably close conformance with [color name] color, which is similar to Federal Standard 595 - FS [federal color designation #].

Replace standard spec 405.2.1.1(3) with the following:

(3) The department will accept the color based on comparison to color samples available for viewing at [location of comparison sample].

stp-405-020 (20190618)

405-100 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP and the Stamping Colored Concrete standard spec bid item to specify stamping full-depth colored concrete. If more than one stamp pattern or color is required under the contract, use one special provision with more than one Stamping Colored Concrete standard spec bid item distinguished by their supplemental descriptions.

OPTION 1: If stamping a state-wide standard "WisDOT" color, include option one text and modify the provision by filling in the fields for the following:

1. ***Color Name:*** ***Specify a name for the color. Use a prefix to indicate the agency specifying the color (Wausau Limestone, NER green, etc.).***

   Do not use WisDOT because that prefix is reserved for standard colors used state-wide. Currently there is only one state-wide color "WisDOT Red".

2. ***Stamping Pattern & Materials:*** ***Specify the pattern and/or other materials requirements for the stamping operation.***
3. ***Surface staining Materials:*** ***Specify materials for surface staining if required.***
4. ***Stamping Construction Methods:*** ***Specify stamping construction requirements.***
5. ***Surface Staining Construction Methods:*** ***Specify staining construction requirements.***

OPTION 2: If stamping a custom color include option two text and modify the provision by filling in the fields for the following:

1. ***Color Name:*** ***Specify a name for the color. Use a prefix to indicate the agency specifying the color (Wausau Limestone, NER green, etc.).***

   Do not use WisDOT because that prefix is reserved for standard colors used state-wide. Currently there is only one state-wide color "WisDOT Red".

2. ***Pigment:*** ***Specify a non-fading pigment conforming to ASTM C979.***
3. ***Dosage:*** ***Specify the minimum dosage of pigment as a percent by weight of the total cementitious material (portland + fly ash + slag) in the concrete mix.***
4. ***Federal Color Designation Number:*** ***Specify the 5 digit color number that most closely approximates the desired color. Online color plates are available at:***

   http://www.federalstandardcolor.com/

5. ***Location of Comparison Sample:*** ***Specify where the contractor needs to go to contractually color match their material to a colored concrete sample.***
6. ***Stamping Pattern & Materials:*** ***Specify the pattern and/or other materials requirements for the stamping operation.***
7. ***Surface staining Materials:*** ***Specify materials for surface staining if required.***
8. ***Stamping Construction Methods:*** ***Specify stamping construction requirements.***
9. ***Surface Staining Construction Methods:*** ***Specify surface staining construction requirements.***

Add other project-specific requirements not covered under standard spec 405. Do not modify payment to make other work incidental to this item. The department may or may not participate in the costs for "architectural enhancements" but will participate in the costs for the concrete component being colored.

Delete the red guidance text and language for the option not chosen from your special.

73. stp-405-100 Stamping Colored Concrete, Item 405.1000.

This special provision describes stamping and coloring concrete [color name] for work constructed under other contract bid items. Conform to standard spec 405 as modified in this special provision.

Option one: Include if using a standard "WisDOT" color defined in standard spec 405.

Replace the entire contents of standard spec 405.2.2 with the following:

(1) [stamping pattern & materials]

(2) [surface staining materials]

Replace the entire contents of standard spec 405.3.2 with the following:

(1) Color concrete full-depth conforming to standard spec 405.3.1

(2) [stamping construction methods]

(3) [surface staining construction methods]

Option two: Include if using a custom color.

Replace standard spec 405.2.1.1(1) with the following:

(1) Integrally color concrete using non-fading pigments conforming to ASTM C979.

- For [color name]: use synthetic [pigment] at a loading of [dosage] percent or more by weight of total cementitious material in the mix. Match the concrete color in reasonably close conformance with [color name] color, which is similar to Federal Standard 595 - FS [federal color designation #].

Replace standard spec 405.2.1.1(3) with the following:

(3) The department will accept the color based on comparison to color samples available for viewing at location of comparison sample.

Replace the entire contents of standard spec 405.2.2 with the following:

(1) Furnish [color name] full-depth colored concrete conforming to standard spec 405.2.1

(2) [stamping pattern & materials]

(3) [surface staining materials]

Replace the entire contents of standard spec 405.3.2 with the following:

(1) Color concrete full-depth conforming to standard spec 405.3.1

(2) [stamping construction methods]

(3) [surface staining construction methods]

stp-405-100 (20190618)

Allows pavement to be open to traffic as soon as possible. Use a different supplemental number, number that follows the ".S" for each pavement thickness; for example, use bid item 415.1150.S.01 for Concrete Pavement Fast Track, 9-Inch and bid item 415.1150.S.02 for Concrete Pavement Fast Track, 10-Inch.

74. stp-415-010 Concrete Pavement Fast Track, Enter pavement thickness-Inch, Item 415.1150.S.

A Description

This special provision describes providing fast track concrete pavement.

B Materials

B.1 Concrete Mixtures

Concrete mix design shall be the responsibility of the contractor. Delete standard spec 501.2.5.4.4 and standard spec 501.3.2.3. Chloride based accelerators shall be prohibited from use in fast track concrete pavement. Chemical admixtures to be used, other than air-entraining agents or water reducers from the department's approved list, must be approved in advance by the engineer. The water-cement ratio of the concrete mixture shall not exceed 0.40.

C Construction

C.1 Opening to Traffic

Delete standard spec 415.3.15 and replace with the following:

Fast track concrete pavement must attain a minimum compressive strength of 3500 psi before it can be opened to traffic. The compressive strength shall be measured by testing concrete cylinders cured in the field on top of the slab, under the curing blanket.

At least two cylinders shall be tested in determining the attained strength of fast track concrete pavement for the purpose of opening the pavement to traffic. The average of test results for the two cylinders shall be used to determine compliance, except that neither cylinder may be less than 10 percent below the required strength.

If opening is not controlled by cylinders, cores may be substituted.

C.2 Test Equipment

In the field laboratory, provide a compressive test machine for use by department staff, and all equipment and materials necessary to perform compressive testing. The compressive test machine shall be an electrically powered unit with a minimum capacity of 200,000 lbs and shall meet all requirements of ASTM C39. After the machine is set in place in the field laboratory on the project, provide calibration by a qualified vendor according to all requirements of ASTM E4. This vendor shall provide the engineer with a Certificate of Calibration. Recalibration shall be required under any of the conditions covered in section 5.1.1 of ASTM C39. The contractor will be allowed access to the field laboratory to use the machine for preliminary mix design testing for fast track concrete.

C.3 Concrete Mix Approval Procedure

The following activities shall be completed in advance of the paving date.

1. Perform preliminary laboratory and/or field trial batching to establish the mix proportions necessary to meet the anticipated necessary age-strength properties.
2. Submit an action plan to the engineer for the specified closure period, which shall include the amount of time to be allowed for concrete curing at the conclusion of paving. Also submit to the engineer, at the same time, a proposed mix design (including specific sources and/or trade names as applicable for all materials) for formal mix design acceptance testing using a full scale field trial batch.
3. Execution of the formal full-scale field trial batch for mix design acceptance shall not begin until the engineer has approved the action plan and all components of the proposed mix design.
4. Under supervision of the engineer, cast a test slab of the same thickness as the actual fast track concrete work required on the project. The test slab shall be cast under similar environmental conditions as the actual fast track concrete work required on the project, subject to the approval of the engineer. The test slab shall consist of at least one full batch from the plant that will provide concrete for the project. Department project staff shall cast test cylinders from this batch, and the cylinders shall be cured laying down on top of the test slab under the same type of insulated blanket that will be used for the project. Department staff shall test these cylinders in pairs as the end of the designated curing time approaches, to determine the curing time required to reach the required 3500 psi compressive strength. If the required strength is not reached within

the curing time allowed in the action plan, the contractor shall modify the mix and repeat the mix acceptance test. Once a mix design is accepted, all components and proportions of the mix must remain the same for all fast track concrete work on the project, with the exception of minor adjustments of water and air-entraining agent as necessary, or the mix acceptance test must be repeated.

Trial slabs cast for preliminary or formal testing may be cast offsite or incorporated in the work in place of standard concrete pavement, subject to approval of the engineer. Test slabs incorporated in the work shall conform to contract requirements for standard concrete pavement, and the department will pay the contract unit price for standard concrete pavement of the same nominal thickness. Test slabs cast offsite become the property of the contractor.

C.4 Curing Blankets

As soon as possible after surface texturing and application of curing compound and without damage to the pavement surface, cover the concrete with impermeable insulating blankets with an R value of at least 0.09. The blankets shall remain in place until the concrete has reached 3500 psi compressive strength. The blankets may be temporarily turned back for the minimum time necessary to facilitate joint sawing.

D Measurement

The department will measure Concrete Pavement Fast Track, Enter pavement thickness-Inch by area in square yards, completed in accordance with the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
415.1150.S	Concrete Pavement Fast Track, Enter pavement thickness-Inch	SY

Payment is full compensation for furnishing and calibrating test equipment; developing mix designs; placing test slabs and furnishing test slab materials when placed offsite; furnishing, hauling, preparing, placing, curing, and protecting of all materials except pavement ties and dowel bars which are installed in the existing concrete pavement; sawing joints; preparing the foundation; and backfilling.

stp-415-010 (20110615)

75. stp-415-020 Concrete Pavement Joint Layout, Item 415.5110.S.

A Description

This special provision describes providing a concrete pavement or concrete base joint layout design for intersections and marking the location of joints in the field

B (Vacant)

C Construction

Plan and locate all points necessary to establish the horizontal position of the transverse and longitudinal joints in the concrete to prevent uncontrolled cracking. Submit a joint layout design to the engineer at least 7 calendar days before paving each intersection. Do not lay out joints until the engineer has reviewed the joint layout design. Mark the location of concrete joints in the field. Follow the plan details for joints in concrete making adjustments as required to fit field conditions.

D Measurement

The department will measure Concrete Pavement Joint Layout as a single lump sum unit for all joint layout designs and marking, 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
415.5110.S	Concrete Pavement Joint Layout	LS

Payment is full compensation for providing the intersection joint layout designs and marking all joints in the field.

The department will adjust pay for crack repairs as specified in standard spec 415.5.3.

stp-415-020 (20170615)

76. stp-415-100 Rout and Seal, Item 415.6000.S.

A Description

This special provision describes routing, cleaning, drying, and sealing the longitudinal edge of pavement joints in new asphaltic pavement shoulders immediately adjacent to the edge of the concrete mainline pavement.

B Materials

Furnish material that conforms to the requirements of the Specifications for Joint Sealants, Hot-Poured, for Concrete and Asphalt Pavements, ASTM Designation: D 6690, Type II, modified to require that the bond strength test be run at -20 degrees F. (The unmodified ASTM D 6690, Type II allows this test to be run at either 0 degrees F or -20 degrees F.)

Deliver each lot or batch of sealing compound to the jobsite in the manufacturer's original sealed container. Mark each container with the manufacturer's name, batch or lot number, and the safe heating temperature. Present the manufacturer's certification stating that the compound meets the requirements of this specification. Before applying the sealant, furnish to the engineer a certificate of compliance and a copy of the manufacturer's recommendations on heating and applying the sealant.

C Construction

C.1 Equipment

Heat the sealing compound to the pouring temperature recommended by the manufacturer in an approved kettle or tank, constructed as a double boiler, with the space between the inner and outer shells filled with oil or other satisfactory heat transfer medium. If, and when, using the heating kettle on concrete or asphaltic pavement, properly insulate the heating kettle to ensure heat is not radiated to the pavement surface.

Make rout cuts in a single pass. Two-pass cutting will not be allowed. Use a self-propelled mechanical router capable of routing the bituminous pavement to provide a 1.0:1.0 depth to width ratio of all routed cracks. The router blade or blades shall be of such size and configuration to cut the desired joint reservoir in one pass. No spacers between blades shall be allowed unless the contractor can demonstrate to the engineer that the desired reservoir and rout cut can be obtained with them. Either wet or dry routing will be permitted provided the above conditions are met. Use a pressure distributor for applying sealing material through a hand-operated wand or nozzle according to sealant manufacturer's instructions.

C.2 Methods

Conduct the operation so that the routing, cleaning, and sealing are continuous operations. Traffic shall not be allowed to knead together or damage the routed joints. Rerout, if necessary, routed joints not sealed before traffic is allowed on the pavement when routing and sealing operations resume. Do not perform rout cutting, cleaning, and sealing, within 48 hours of the placement of the shoulder's surface course.

Rout the longitudinal joint to a minimum width of 3/4 inches and a minimum depth of 3/4 inches. Use a power vacuum or equivalent to immediately remove any routing slurry, dirt, or deleterious matter adhering to the joint walls or remaining in the joint cavity, or both. Before sealing, dry the cleaned joints either by air-drying or by using a high capacity torch. Immediately before sealing, blow out the dried crack with a blast of compressed air, 80-psi minimum. Continue cleaning until the joint is dry, and until all dirt, dust, or deleterious matter is removed from the joint and adjacent pavement to the satisfaction of the engineer. If the air compressor produces dirt or other residue in the joint cavity, the contractor shall be required to clean the joint again.

If cleaning operations could cause damage to, or interfere with, traffic in adjacent lanes, or both, provide protective screening that is subject to the approval of the engineer to the cleaning operation.

Following cleaning, dry the routed joints and warm them with a hot air lance. Take care not to burn the pavement surface. Under no circumstances shall more than two minutes elapse between the time the hot air lance is used, and the sealant is placed.

Provide positive temperature control and mechanical agitation. Do not heat the sealant to more than 20 degrees F below the safe heating temperature. The safe heating temperature can be obtained from the manufacturer's shipping container. Provide a direct connecting pressure type extruding device with

nozzles shaped for insertion into the joint. Immediately remove sealant spilled on the surface of the pavement.

Seal the joints when the sealant material is at the pouring temperature recommended by the manufacturer. Fill the joint such that after cooling, the sealant is flush with the adjacent pavement surface. Do not overfill the joint; the engineer may allow a very slight overband. Sand shall not be spread on the sealed joints to allow for opening to traffic. Before opening to traffic, the sealant shall be tack free.

D Measurement

The department will measure Rout and Seal in length by the linear foot, completed according to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
415.6000.S	Rout and Seal	LF

Payment is full compensation for rout cutting; cleaning the joint; and rerouting as required under C.2.

stp-415-100 (20140630)

77. stp-416-010 Pavement Dowel Bars Retrofit Warranted, Item 416.0623.S.

A Description

A.1 General

This special provision describes restoring load transfer in existing concrete pavement by installing epoxy coated dowel bars across transverse joints or cracks and warranting the workmanship and materials for three years.

The contractor will be responsible for the pavement performance and shall warranty the work for the finished roadway for a period of three years following completion of the retrofit dowel bar work and opening to public traffic.

Provisions of the warranty work will apply to all concrete mixtures, dowel bars, and materials placed as part of the retrofit dowel bar operations.

A.2 Warranty

The necessary warranty bond for the concrete pavement items will be in effect for the entire three-year warranty period beginning when the warranted retrofit dowel bar work is completed and open to public traffic. The bonding company must have an AM Best rating of "A-" or better and the contractor will provide proof of a three-year bond commitment before execution of the contract.

The warranty bond will be 100 percent of the dollar value for the warranted retrofit dowel bars. The bond will ensure the proper and prompt completion of required warranty work following completion of the work, including payments for furnishing all labor, equipment, and materials used according to this specification.

The contract bond, which remains in effect for one year beyond the completion of the project, will also include warranty work as described in Section C.11 Warranty Work of this article. For the remaining two-year warranty period, provide documentation that the warranty bond will be provided in one of the following manners:

1. A single term two-year warranty bond.
2. A one-year renewable, non-cumulative warranty bond for two consecutive terms.

If the warranted retrofit dowel bars are placed by a subcontractor rather than by the contractor, the subcontractor performing the warranted work may provide the warranty bond for the remaining two-year warranty period. If a subcontractor does provide the bond, it shall be a dual obligee bond, naming the contractor and the Wisconsin Department of Transportation as obligees. The subcontractor warranty bond will be one of the following:

1. A single term two-year warranty bond.
2. A one-year renewable, non-cumulative warranty bond for two consecutive terms.

Failure of the contractor, subcontractor or its surety to issue or renew the warranty bond will be considered a default and will result in forfeiture of 20% of the face amount of the bond to the department.

All warranty work will be as prescribed in Section C.11 Warranty Work of this article. At the end of the warranty period, the contractor will be relieved of the responsibility to perform further warranty work, provided all previous warranty work has been completed.

Maintain insurance, in the course of performing warranty work, as specified in standard spec 107.26 throughout the three-year warranty period.

B Materials

Use epoxy coated dowel bars that conform to the requirements prescribed in standard spec 505.2.6.1 and standard spec 505.2.6.2 except that the surface treatment, capable of preventing bond between the bar and the concrete, on the epoxy-coated bars shall be manufacturer applied.

Dowel bars shall have tight fitting end caps made of non-metallic material that allow for 1/4 inch movement of the bar at each end. Before use, submit a sample end cap to the engineer for approval.

Use 3/8 inch thick foam core board that is constructed of closed cell foam and is faced with poster board or plastic material on each side.

Use concrete patch material tested as Rapid Set Concrete Patching Materials that conforms to ASTM C928 with the following deletion or addition: Delete sections 1.1.1, 1.1.2, and 1.3. Only use material that: (1) provides an opening to traffic compressive strength of 3000 psi in three hours per ASTM C39; (2) exhibits expansion of less than 0.10 percent per ASTM C531; section 1.3 of the ASTM C531 should be modified to say this test method is limited to materials with aggregate size of 3/8 inch or less; and (3) has a calculated durability factor of 90.0 percent minimum at the end of 300 freeze-thaw cycles per ASTM C666, Procedure A (water shall contain 5% sodium chloride by mass). Before use, provide a certification of compliance with the above requirements as prescribed by standard spec 106.3.3. Patching material shall be extended with a clean natural aggregate. Aggregate extender shall conform to the requirements prescribed in standard spec 501.2.5.4 except that the size requirements are as follows:

Minimum of 95% passing the 3/8 (9.5 mm) sieve

Maximum of 25% passing the No. 4 (4.75 mm) sieve

Use acceptable caulking filler for sealing the existing joints or cracks at the bottom and sides of the slot. Acceptable caulking filler includes any commercial caulk designed as a concrete sealant that is compatible with the patch material being used.

Use dowel bar chairs and expansion caps made of non-metallic non-organic material. Design chairs to fit snugly in the saw cut and hold the bar in the lateral center of the slot. Expansion caps will provide for 1/4 inch of movement at each end of the dowel bar. Before use, submit sample chairs and expansion caps to the engineer for approval.

Provide a concrete curing agent that is a resin of 100 percent poly-alpha-methylstyrene type curing compound meeting ASTM C309, Type 2, Class B specifications and conforming to all requirements listed in the following table:

Properties	Minimum	Maximum
Total Solids, % by weight of compound	42	
Reflectance in 72 hours (ASTM E1347	65	
Loss of Water, kg/m^2 in 24 hours (ASTM C156)		0.15
Loss of water, kg/m^2 in 72 hours (ASTM C156)		0.40
Settling Test, ml/100 ml in 72 hours[1]		2
VOC Content, g/L		350
Infrared Spectrum, Vehicle[2]	100% alpha-methylstyrene	

[1] Test method on file at the department's Materials Testing Lab.

[2] The infrared scan for the dried vehicle from the curing compound shall match the infrared scan on file at the department's Materials Testing Lab.

Shelf life of the product shall be six months from date of manufacture. The product may be re-tested by the department's Materials Testing Lab and re-approved, if the physical and chemical properties have not changed, for an additional six months. However, the maximum shelf life shall not exceed one year from manufacture date.

C Construction

Install the dowel bars in the existing concrete pavement as shown in the plan details and according to the following specifications.

C.1 Slots

Cut slots in the pavement using a gang saw capable of simultaneously cutting a minimum of three slots, or by using an alternate method approved by the engineer.

The saw cuts for all required slots at each transverse joint or crack shall be made such that the longitudinal centerline of each individual dowel bar is placed within the following tolerances:

1. At the nominal mid-depth of the lower slab ±½ inch (13 mm).
2. Parallel to the top of the pavement ±½ inch (13 mm) in 18 inches (450 mm).
3. Parallel to other bars in the same joint or crack ±½ inch (13 mm) in 18 inches (450 mm).
4. Parallel to the roadway centerline ±½ inch (13 mm) in 18 inches (450 mm).

Traffic may run on sawed slots for a maximum of two weeks.

C.2 Removing Concrete

Remove concrete from the slot area with a jackhammer no larger than the 30-pound (14 kg) class.

Before installing the dowel, sandblast all exposed surfaces and cracks in the slot, and clean all exposed surfaces and cracks of saw slurry and loose material. Dispose of all loose material off the highway right-of-way.

C.3 Placing Foam Core Board

Place foam core board to maintain the continuity of the existing transverse joint or crack as shown in the standard detail drawing.

Size the foam core board to fit the skew angle of the joint or crack, and extend to, or beyond, the top surface of the lower slab. Fit the foam core board tightly around the dowel bar and to the bottom and sides of the slot.

To provide a tight fit for the foam core board and to prevent any of the patch mix from entering the joint or crack, caulk existing transverse joints or cracks with a sealant at the bottom and sides of the slot as shown in the plan details.

Install the foam core board such that it remains in position and is tight to all edges during placement of the patching material. Tabs may be used to hold the foam core board in place. Existing joint sealant may be cut or removed to accommodate tabs. If the foam core board shifts during the placement of the patch mix, the work shall be rejected and repair the work at no expense to the department.

Alternatively, the foam core board may be installed such that it extends a minimum of one inch above the dowel bar and is a minimum of 2 inches below the surface of the pavement. Place the insert so that it covers the existing transverse joint or crack and is capable of remaining in a vertical position, tight to all edges during placement of patch materials. Re-establish the joint by sawing down to the level of the foam core board within three hours of placement of the patch material. If the contractor chooses this method, no damage to the dowel bars will be allowed due to the sawing operation being completed too deep. Contractor operations of placing patch material and sawing must ensure that all material is removed from the joint allowing for the expansion and contraction without generating point to point contact across the joint.

C.4 Placing Dowel Bars

Place dowel bars as a complete assembly with chairs and foam core board attached across the transverse joint or crack as shown in the plan details. Chairs shall hold the dowel bar securely in place during the placement of the patch mix. Before the placement of the patch mix, the engineer shall approve the placement of the dowels. If the dowel bar shifts during the placement of the patch mix, the work shall be rejected and repair the work at no expense to the department.

C.5 Placing Patch Mix

Immediately before placing the patch mix, moisten existing concrete surfaces in the slot or prepare the existing concrete surfaces as recommended by the manufacturer, or both. Before patching material is placed, remove all excess water in the slot.

With a portable or mobile mixer, mix patching material according to the manufacturer’s recommendations.

Place the patching material into the slot and vibrate the patching material to ensure that the dowel bar is completely encased. The diameter of the vibrator head shall not exceed 1 1/4 inches (32 mm).

When the ambient temperature is below 50 degrees Fahrenheit (10 degrees Celsius), placement of patching material will require prior approval by the engineer.

If the pavement is not going to be diamond ground, strike-off the surface of the filled area flush with the adjacent concrete. If the pavement is to be diamond ground after completion of the dowel bar retrofit operation, it is acceptable to leave the slot slightly overfilled.

Before placing any vehicle load on the retrofitted transverse joint or crack, cure patching material by the impervious coating method for a minimum of three hours. The coverage rate for the curing agent will be at a rate of 100 square feet per gallon. During this three-hour initial curing period, covering may be needed to prevent excess thermal stress in the patch material.

When the ambient temperature is below 50 degrees Fahrenheit (10 degrees C), the engineer may postpone opening to vehicular loads or require covering during the initial curing period, or both.

C.6 Restoring Joints

Restore joints with a saw cut that is at least 1/4 inch wide and is deep enough to remove all patching material from the joint. Saw the joint within 24 hours after placement of patching material. After sawing, thoroughly clean the joint or crack to remove loose compressible materials.

If the pavement joints are sealed, remove the existing joint sealant and re-seal the joint with hot pour rubberized asphaltic material. Joint sealing materials and work will be completed and paid for under the applicable item in this contract.

C.7 Damage During Construction

At no cost to the department, repair any damage to the pavement due to the contractor's operations.

C.8 Conflict Resolution Team

The Conflict Resolution Team will have the final authority to make decisions if a conflict occurs. The team will resolve disputes by a majority vote. The team will consist of two contractor representatives, two department (region and statewide bureaus) representatives, and a third party mutually agreed upon by both the department and the contractor. The cost of the third party will be equally shared between the department and the contractor.

C.9 Pavement Distress Surveys and Contractor Monitoring

C.9.1 Pavement Distress Surveys

The department's Bureau of State Highway Programs, Data Management Section, Pavement Data Unit will conduct distress surveys of the mainline pavement according to the unit's normal surveying cycle, or if requested by the contractor or region. The unit's surveying cycle is dependent on the location of the highway and the highway classification.

The pavement distress surveys will be conducted by dividing the highway system into nominal one-mile sections. Two 0.1-mile segments in each mile will be evaluated for pavement distress. One of the segments evaluated will be between 0.3 and 0.4 miles from the start of the section. The department will select the second one-tenth mile segment randomly. If areas other than the surveyed segments are suspected of meeting or exceeding a threshold level, the department will divide the entire mainline project pavement into 0.1-mile segments and conduct a distress survey in any, or all, segments. The distress survey results will be made available to the region, statewide bureaus, the contractor, and FHWA. Pavement distress threshold criterions are listed in Section C.10 Table of Distress Types, Threshold Levels, and Remedial Action of this article.

The first year, the department will determine the random 0.1-mile segments and will survey the selected segments throughout the warranty period. The first survey will identify the segment locations, which will not change thereafter.

If any of the threshold level criterions are met and the contractor does not agree to the validity of the pavement distress survey results, written notification of the dispute will be made to the engineer. The Conflict Resolution Team will resolve the dispute.

C.9.2 Contractor Monitoring

During the warranty period, the contractor may monitor the pavement using nondestructive procedures. Coring, milling, grinding or other destructive procedures may not be performed by the contractor without approval of the engineer according to the permit requirements of Section C.11.1 Warranty Work – General of this article.

C.10 Table of Distress Types, Threshold Levels, and Remedial Action

The department will include each of the distress types listed below in the mainline pavement survey. The table lists the remedial action required for each distress type when the corresponding threshold level criterion is met.

Distress Type	Threshold Level	Remedial Action
Distressed Joints within the Dowel Bar Retrofit Slot	Spalling of 1 inch or greater on more than 10 percent of the joints per 0.1 mile segment Or	Remove and replace retrofit dowel bar.

	Spalling of 2 inches or greater on 1 percent of the joints per 0.1 mile segment.	
Cracking in the existing concrete pavement between the slots or across slab to pavement edge (corner crack)	Greater than 1 percent of the joints per lane mile	Standard full depth concrete repair of the pavement.
Loss of surface and concrete patch material within the dowel bar slot.	Loss of material greater than ½ inch but less than 1 inch on more than 1 percent of the joints per lane mile Loss of material of 1 inch or greater on more than 1 percent of the joints per lane mile	Surface treatment as approved by the engineer. Remove and replace retrofit dowel bar.
Debonding of the patch concrete with the existing concrete on any surface of the slot	Debonding on any one surface on more than 1 percent of the joints per lane mile.	Remove and replace the retrofit dowel bar
Break up or dislodgement of concrete patch material within the slot	One or more cracks in greater than 1 percent of the joints per lane mile	Remove and replace the retrofit dowel bar

[1] A joint is defined as a transverse joint that is 12 foot long or one pavement lane wide

[2] Diamond grinding shall be done on any joint on which the contractor performed removal and replacement of the dowel bars or on any full depth concrete repair of the pavement as may be required to reestablish adequate ride characteristics as defined under standard spec 415.3.10, or both.

[3] All repaired joints will be resealed.

C.11 Warranty Work

C.11.1 General

Perform warranty work during the three-year warranty period. Warranty work consists of remedial work and elective/preventive maintenance.

During warranty work operations, traffic control will be as specified in standard spec 643 and will conform to Part 6 of the Wisconsin Manual on Uniform Traffic Control Devices.

The contractor will document all warranty work performed and annually provide this information to the region.

If warranty work necessitates a corrective action to the pavement markings, raised pavement markers, adjacent lanes, or shoulders, that additional corrective action will be the responsibility of the contractor.

All warranty work including but not limited to remedial work and elective/preventive maintenance shall require a permit from the department that can be obtained by contacting the region's pavement engineer.

C.11.2 Remedial Work

Remedial work will be based on the results of the mainline pavement distress or manual surveys, or both.

If any of the threshold level criterions in the table in Section C.10 Table of Distress Types, Threshold Levels, and Remedial Action of this article are met on the mainline pavement, and the contractor agrees to the validity of the pavement distress survey results, perform the remedial work prescribed in the remedial action column of the table. Remedial work to be performed and materials to be used will be the joint decision of the contractor and the engineer. The remedial work shall be performed on all segments of the project where a threshold level is met unless otherwise noted under the remedial action. The remedial work shall be applied to the entire segment.

Remedial action work required on the mainline roadway will also be performed on the integral concrete shoulders, curb and curb and gutter. Auxiliary lanes impacted by the distress in the mainline warranted retrofit dowel bars will also be repaired as part of the remedial action. If an impasse develops, the Conflict Resolution Team will make a final determination.

Remedial work shall be performed in the same calendar year that the pavement distresses were recorded.

The contractor with the engineer's approval may elect to delay the remedial actions for efficiency of operations. Such delay does not relieve the contractor of the responsibility for appropriate remedial action at the time of the repair.

The contractor with the engineer's approval may elect to delay the remedial actions in order to minimize the impacts of delay and inconvenience to the traveling public.

If at any time during the warranty period 30 percent or more of the project segments require or have received remedial action, the entire project will receive remedial action as mutually determined by the contractor and the engineer.

The contractor will have the first option to perform the remedial work. If, in the opinion of the engineer, the problem requires immediate attention for the safety of the traveling public and the contractor cannot perform the remedial work within eight hours, the engineer may have the remedial work done by other forces at the contractor's expense. Remedial work performed by other forces will not alter the requirements, responsibilities, or obligations of the warranty.

If remedial action work or elective/preventive action work performed by the contractor necessitates a corrective action to pavement marking, raised pavement markers, adjacent lanes, and shoulders, then such corrective action to the pavement markings, raised pavement markers, adjacent lanes, and shoulders will be the responsibility of the contractor.

The contractor will not be held responsible for distresses, which are caused by factors beyond the control of the contractor. However, due to the fact that the dowel bar retrofit work is under the warranty, the contractor may be given the option to make these repairs at reasonable cost to be negotiated with the engineer. Costs for these repairs will be based upon time, materials labor, equipment costs, and traffic control costs, and will be consistent with the normal cost of maintenance traditionally performed by county highway forces.

C.11.3 Elective/Preventive Maintenance

Elective/preventive maintenance will be a contractor option. Elective/preventive maintenance to be performed and materials to be used will be coordinated jointly by the contractor and the engineer.

D Measurement

The department will measure Pavement Dowel Bars Retrofit Warranted by each dowel bar, installed 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
416.0623.S	Pavement Dowel Bars Retrofit Warranted	EACH

Payment is full compensation for furnishing all materials, including epoxy coated dowel bars; sawing slots; removing concrete; installing dowel bars; furnishing and installing patching material; curing the patch material; sawing the joints; furnishing and applying water; for the warranty and warranty bonds; and for performing warranty work.

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78. stp-416-015 Concrete Pavement Partial Depth Repair Joint Repair, Item 416.0750.S; Concrete Pavement Partial Depth Repair Crack Repair, Item 416.0752.S; Concrete Pavement Partial Depth Repair Surface Repair, Item 416.0754.S; Concrete Pavement Partial Depth Repair Edge Repair, Item 416.0756.S; Concrete Pavement Partial Depth Repair Full Depth Adjustment, Item 416.0758.S.

A Description

This special provision describes removing deteriorated concrete; furnishing, placing and curing concrete to the original slope and grade; and reestablishing cracks or joints at areas the plansshow and as the engineer directs.

The item Concrete Pavement Partial Depth Repair Joint Repair consists of removing deteriorated concrete at the areas designated in the plans, furnishing, placing, and curing concrete to the original slope and grade, and reestablishing joints.

The item Concrete Pavement Partial Depth Repair Crack Repair consists of removing deteriorated concrete at the areas designated in the plans, furnishing, placing, and curing concrete to the original slope and grade, and reestablishing cracks.

The item Concrete Pavement Partial Depth Repair Surface Repair consists of removing deteriorated concrete at the areas designated in the plans, furnishing, placing, and curing concrete to the original slope and grade.

The item Concrete Pavement Partial Depth Repair Edge Repair consists of removing deteriorated concrete at the areas designated in the plans, furnishing, placing, and curing concrete to the original slope and grade.

The item Concrete Pavement Partial Depth Repair Full Depth Adjustment consists of removing deteriorated concrete at the areas designated in the plans, furnishing and installing required pavement tie, furnishing, placing, and curing concrete to the original slope and grade, and reestablishing joints.

A.1 General

In advance of the beginning of the rehabilitation operation, establish traffic control for rehabilitation surveys and marking of locations.

Any removal and replacement of existing asphaltic concrete pavement in conjunction with the concrete pavement operations shall be incidental work for which no direct payment will be made unless otherwise shown in the plan.

Perform the removal operation in a manner that precludes damage to the remaining pavement. Any damage to the in-place concrete pavement by the contractor's operations, shall be repaired before acceptance as the engineer directs.

Milling is generally completed with one pass of the milling machine. The nominal width of Joint Repair or Crack Repair shall not exceed 12 inches (305) mm). Any repair area required, beyond the nominal 12 inch (305 mm) width will be paid for as Surface Repair. The length of Full Depth Adjustment, along the transverse joint, from the nearest longitudinal joint, shall not be greater than 18 inches (458 mm).

If during removal operations it is determined that a full-lane width, full-depth repair its required, the contractor will receive partial payment for a measured quantity of the intended repair item, and the work shall be completed under the item of Concrete Pavement Repair, Item 416.0710. If after milling a transverse joint deteriorated concrete exists greater than 4 inches wide and 6 feet in length, the joint shall be converted to a full-depth Concrete Pavement Repair.

Do not place repair concrete when the ambient air temperature is below 50° F (10° C), except as permitted by the engineer. When the ambient air temperature is below 50° F (10° C) the engineer may require covering during the initial curing period.

Partial depth repair areas should be inspected for possible debonding, by chain dragging or other suitable procedure, before opening to public traffic. De-bonded repairs must be removed and replaced.

Opening of pavement repairs to traffic will be controlled by cylinder tests, as set forth in standard spec 415.3.15.

Replace any area of the asphaltic shoulder damaged during the pavement removal operations under this item with a commercially produced asphaltic patching material to the elevation of the adjacent shoulder.

At no expense to the department, remove and replace any areas of failure that appear within one month of the original repair, or any subsequent repair, including traffic control. Failures include but may not be limited to loss of bonding to the in-place concrete, spalling, or crack apparent in the repair other than the desired crack in the newly constructed joint or reestablished crack.

A.2 Equipment

Use only concrete milling machines that are equipped with a device for stopping at preset depths to prevent damage to dowel bars. Additionally, shroud the equipment to prevent discharge of any loosened material into adjacent work areas or live traffic lanes.

Use air chippers or breakers for chipping the old concrete surface that have a total weight not exceeding 30 lb. (13.6 kg) and are equipped with flat, chisel-type points that have cutting edges not less than.75 inch (19 mm) or greater than 3 inches (76.2 mm) wide.

Use concrete mixing equipment that provides material of uniform consistency. Do not prepare site-mixed concrete more than ½ hour before placement. Do not prepare ready-mixed concrete more than 1 hour before placement.

Use mechanical vibrators that are capable of operating at frequencies sufficient to achieve thorough and uniform consolidation, but not less than 7000 impulses per minute. Have available at least one spare vibrator, in working order and of sufficient frequency, on the work site before concrete placement is started.

B Materials

All materials used in the work shall conform to the requirements specified for the class of material named.

B.1 Concrete

The replacement concrete shall comply with the standard specifications except as modified below. It shall be furnished, placed, and cured according to the provisions in the plans, specifications, and contract.

Use the following proportions, assuming a specific gravity of 2.65, for 1 cubic yard (cubic meter) of concrete:

850 lb. (505 kg) Portland Concrete	(Type 1 or Type III)
1338 lb. (794 kg) Fine Aggregate	(Per standard specifications except max P200=2.5%)
1338 lb. (794 kg) Coarse Aggregate	(See table below for gradation)

Coarse Aggregate Gradation

SIEVE SIZE	PERCENT PASSING (by weight)
3/8 (9.5 mm)	100
#4 (4.75 mm)	55-95
#50 (300 µm)	0-5
#200 (75 µm)	0-1.0

Maximum slump shall be 1 inch (25 mm).

Air Content shall be 6% ±1.5%

ASTM C494 Type A admixture shall be used, unless Type E is used.

ASTM C494 Type E admixture may be used, according to the manufacturer's recommendations, to achieve the required opening strength in the desired time period. Dosage will vary with ambient temperature and desired opening time.

The use of more than 50% of the maximum manufacturer's recommended dosage of Type E admixture will require the concrete to be sprayed with curing compound and covered with wet burlene.

B.2 Compression Relief Material

Provide compression relief material that is made of a rigid, compressible, non-absorbent material.

B.3 Bonding Agent

Use bonding grout that consists of equal portions of Portland cement and sand, mixed with sufficient water to form a slurry having the consistency of thick cream.

B.4 Concrete Curing Agent

Provide a concrete curing agent that is a resin of 100 percent poly-alpha-methylstyrene type curing compound meeting ASTM C309, Type 2, Class B specifications and conforming to all requirements according to the following table:

Properties	Minimum	Maximum
Total Solids, % by weight of compound	42	
Reflectance in 72 hours (ASTM E1347	65	
Loss of Water, kg/m2 in 24 hours (ASTM C156)		0.15
Loss of water, kg/m2 in 72 hours (ASTM C156)		0.40
Settling Test, ml/100 ml in 72 hours [1]		2
V.O.C. Content, g/L		350
Infrared Spectrum, Vehicle [2]	100% alpha-methylstyrene	

[1] Test Method on file at the department's Materials Testing Lab.

[2] The infrared scan for the dried vehicle from the curing compound shall match the infrared scan on file at the department's Materials Testing Lab.

Shelf life of the product shall be six months from date of manufacture. The product may be re-tested by the department's Materials Testing Lab and re-approved, if the physical and chemical properties have not changed, for an additional six months. However, the maximum shelf life shall not exceed one year from manufacture date.

C Construction

Remove the concrete by milling to the depths and dimensions as shown on the plan or as determined by the engineer, or both.

Milling may be accomplished either longitudinally or transversely to the joint, crack, or edge. The removal process must not damage dowel bars. In the event a dowel bar exhibits excessive corrosion, cut, or burn-off the bar.

The removal of the concrete surface in the designated repair areas shall have a minimum depth of 2 inches (50.8 mm) with all deteriorated concrete removed to a maximum depth of one-half the pavement thickness, or the top of the dowel bars. Using air chippers, remove all cracked or deteriorated concrete exposed after milling to sound concrete. Chipping at the milled surface of the crack or joint shall be a minimum 2 inches wide and shall be at a 1:1 slope.

When dowel bars are present, take precaution not to disturb unsound concrete below the tops of the dowels. If some of this unsound material is accidentally blown out during the cleaning process, fill in the voids with clean, dry sand.

Use air chippers only for final preparation of the repair area.

Storage of the removed material on the roadway will only be permitted in conjunction with a continuous removal and pick-up operation. During non-working hours, clear the roadway of all materials and equipment.

The removed pavement shall become the property of the contractor and disposed of as specified in standard spec 204.3.1.3.

Install pavement ties conforming to standard spec 416.3.6.

Sandblast all exposed surfaces within 24 hours before concrete placement. If it rains before concrete placement, sandblast the repair areas again. Additionally, clean the repair areas of loose material by air blasting before applying the bonding grout.

Coat exposed surfaces of dowel bars to prevent bonding between the bar and the repair concrete. Take precaution to prevent contamination of existing concrete in the repair area.

Place compression relief material to maintain the continuity of the existing crack or to reestablish the joint in a full-depth adjustment. Install compression relief material such that it remains in position and is tight to all edges during placement of the repair concrete. During concrete placement and vibrating, keep the

compression relief material in contact with the bottom of the repair area. To ensure that cracks are reestablished in their original locations, scribe their locations on the adjoining pavement outside the removal area, before removal operations.

Reestablish cracks and joints to a 1/4 inch width, or to the existing crack or joint width, whichever is greater.

Immediately before placing the concrete, coat the repair surface with bonding grout. The surface shall be completely dry for at least one-half hour before coating with bonding grout. If the surface isn't completely dry, dry the surface using heat to remove all moisture from the repair surface. Mix the grout by mechanical means and thoroughly brush it over the prepared concrete surface to ensure that all parts receive an even coating. No excess grout shall be permitted to collect in pockets. Place grout within one and a half hours of mixing. If the grout whitens, sandblast, and re-grout.

Vibrate concrete as necessary to uniformly and thoroughly consolidate the entire mass of fresh concrete without causing segregation of the aggregates or the formation of localized areas of grout.

Concrete repairs shall not protrude beyond the original cross-section of the pavement by more than 3/8 inch (9.5 mm). The edges shall be formed or sawn full-depth.

Strike-off the surface of the repaired area flush with the adjacent concrete and finish the surface to a uniform texture, true to grade and cross section and free from porous areas. As a final finishing operation, float the concrete toward the edges of the repair.

While the concrete is still plastic, the repair shall be tested for trueness with a straightedge.

Reestablish cracks using compression relief material to or beyond the surface of the repair. Initially reestablish joints in plastic concrete by using a jointing tool. Establish tooled joints to a minimum depth of 2 inches. Tooled edges shall be provided, adjacent to all compression relief material, in fresh concrete. Complete the removal of excess compression relief material above the pavement surface without damage to the repair area. The method of removal will be reviewed and approved by the engineer before any removal.

Surface texturing, if required by the engineer, shall consist of a broomed finish in the long dimension direction of the repair.

Apply curing compound to the fresh concrete as soon as possible. Apply the compound uniformly, at a minimum rate of one gallon per 100 square feet (0.41 L/m^2).

Restore joints by sawing. Saw the joints in a single cut, to the width and depth the plans show, and conforming to standard spec 415.3.9.

Thoroughly clean the joint or crack after sawing to remove loose compressible material.

D Measurement

The department will measure Concrete Pavement Partial Depth Repair Joint Repair; Concrete Pavement Partial Depth Repair Crack Repair; and Concrete Pavement Partial Depth Repair Edge Repair by the linear foot, acceptably completed.

The department will measure Concrete Pavement Partial Depth Repair Surface Repair and Concrete Pavement Partial Depth Repair Full Depth Adjustment in area by the square foot, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
416.0750.S	Concrete Pavement Partial Depth Repair Joint Repair	LF
416.0752.S	Concrete Pavement Partial Depth Repair Crack Repair	LF
416.0754.S	Concrete Pavement Partial Depth Repair Surface Repair	SF
416.0756.S	Concrete Pavement Partial Depth Repair Edge Repair	LF
416.0758.S	Concrete Pavement Partial Depth Repair Full Depth Adjustment	SF

If a Partial Depth Repair item is changed, by the project engineer, to a full-depth repair, the contractor shall be paid at a measured quantity of 40 percent of the intended repair plus the full cost for Full Depth Repair.

Payment for Concrete Pavement Partial Depth Repair Joint Repair; Concrete Pavement Partial Depth Repair Crack Repair, and Concrete Pavement Partial Depth Repair Edge Repair, is full compensation for

removing the concrete; disposing of materials; furnishing and placing sand where required; furnishing and placing compression relief material where required; furnishing and placing preformed joint filler where required; placement and curing of the concrete; and for reestablishing cracks or joints.

Payment for Concrete Pavement Partial Depth Repair Surface Repair and Concrete Pavement Partial Depth Repair Full Depth Adjustment, is full compensation for removing the concrete; for disposing of materials; furnishing and installing pavement ties where necessary; furnishing and placing preformed joint filler where required; furnishing and placing compression relief material where required; replacing the concrete; and reestablishing joints. The item Partial Depth Repair, Full Depth Adjustment will be paid for as a separate item at locations where it is necessary to extend the repair through the full remaining concrete pavement thickness.

stp-416-015 (20160607)

79. stp-416-020 High Performance Dowel Bars for Concrete Pavement.

Replace standard spec 415.2.2 with the following:

(1) Furnish steel reinforcement conforming to standard spec 505. Furnish tie bars as the plans show and conforming to standard spec 505.2.6.

(2) Furnish dowel bars of the dimensions the plans show and conforming to standard spec 505.2.6 except for transverse joints in concrete pavement, furnish non-corrosive, high performance dowel bars from the department's APL. Use only one type of high performance bar for work under the contract.

stp-416-020 (20191121)

Use this to fill rumble strips in concrete pavement that is not being overlaid. Select the Each item for intermittent groups of shoulder rumble strips (typically constructed prior to 1992) or the appropriate width LF item for continuous shoulder rumble strips.

Delete the items not be used for your project from the title and from the table in section E Payment.

80. stp-416-090 Filling Concrete Shoulder Rumble Strips (size), Item 416.9100.S; Filling Concrete Shoulder Rumble Strips 12-Inch, Item 416.9112.S; Filling Concrete Shoulder Rumble Strips 16-Inch, Item 416.9116.S; Filling Concrete Shoulder Rumble Strips 18-Inch, Item 416.9118.S.

A Description

This special provision describes filling existing concrete shoulder rumble strip grooves prior to staging that requires shifting traffic onto the shoulder.

B Materials

Furnish a commercial patching material selected from the department's approved products list for rapid setting concrete patch material. Provide the engineer a copy of the manufacturer's specifications and installation instructions.

C Construction

Fill the rumble strip grooves by cleaning/preparing the voids and applying patch material according to manufacturer's instructions. Apply patch material in a neat manner and protect the surrounding surface from application. Finish patch smooth and flush with surrounding pavement. Maintain work done under this item until no longer required for traffic staging.

D Measurement

D.1 By Each

The department will measure Filling Concrete Shoulder Rumble Strips (size) as each individual rumble strip array, acceptably completed.

D.2 By Linear Foot

The department will measure Filling Concrete Shoulder Rumble Strips (inch) by the linear foot, acceptably completed, measured as the length along each shoulder. Gaps in rumble strips greater than 5 feet will not be measured. Grooves are approximately 7 inches long x 0.5 inch deep x the width indicated and spaced at 12 inches center-to-center.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
416.9100.S	Filling Concrete Shoulder Rumble Strips (Size)	EACH
416.9112.S	Filling Concrete Shoulder Rumble Strips 12-Inch	LF
416.9116.S	Filling Concrete Shoulder Rumble Strips 16-Inch	LF
416.9118.S	Filling Concrete Shoulder Rumble Strips 18-Inch	LF

Payment is full compensation for furnishing patch material, cleaning/preparing the voids, applying patch material, and for maintenance during the time specified.

stp-416-090 (20180628)

450-010 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use in contracts that require work done under standard spec 450 through 490 when the probability of encountering extreme weather conditions is high:

- ***Between November 1 and April 15 inclusive for the Northern Asphalt Zone***
- ***Between November 15 and April 1 inclusive for the Southern Asphalt Zone***

Limited to temporary pavement and lower layers of HMA for design purposes.

NOTE: This STSP is designed to be used for temporary, emergency and traffic maintenance situations paved in the winter months only. It is not to be used on pavements that are expected to be in service for a full design life. It is not meant to be used as an extension of the cold weather paving provisions in standard spec 450. Paving in cold weather should be avoided.

81. stp-450-010 Asphaltic Mixture For Extreme Conditions, Item 450.1100.S.

A Description

This special provision describes assigning responsibility for extreme weather paving to the department.

This special provision applies only to work done under standard spec 450 through 490 that the contract requires to be performed within the following prescribed times:

- In the northern asphalt zone: between November 1 and April 15 inclusive.
- In the southern asphalt zone: between November 15 and April 1 inclusive.
- When ambient temperatures are less than 36 F for upper layers, 32 F for lower layers, and the contractor is asked to pave.

CMM 4-53 figure 2 defines asphalt zones.

This special provision applies only to following work:

DESCRIPTION	LOCATION

B Materials

Conform to the materials requirements of standard spec 450 through 490 as modified in other contract special provisions for work specified in A.

C Construction

Conform to the construction requirements of standard spec 450 through 490 as modified in other contract special provisions for work specified in A, and as follows:

Delete standard spec 450.3.2.1.1(1) and 450.5.2(3).

Replace standard spec 450.3.2.1.2.2(2) with the following:

(2) Engineer written acceptance is required for the cold weather paving plan. Engineer acceptance of the plan does not relieve the contractor of responsibility for the quality of HMA pavement placed in cold weather except as specified in E.

D Measurement

The department will measure Asphaltic Mixture For Extreme Conditions by the ton placed for work specified in A. The department will only measure work performed under standard spec 460, 465, and related special provision bid items if that work conforms to an engineer-accepted cold weather paving plan.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
450.1100.S	Asphaltic Mixture For Extreme Conditions	TON

Payment for Asphaltic Mixture For Extreme Conditions is full compensation for additional materials and equipment required for operations in extreme conditions for work specified in A.

The department will not assess disincentives for density or ride deficiencies the engineer atributes to cold weather paving. The department is responsible for damage or defects the engineer attributes to temperature or other extreme conditions. The department will pay separately for repairing this damage or these defects as extra work.

The department will pay separately for work done under standard spec 450 through 490 and associated special provisions. The department will not pay separately for the HMA Cold Weather Paving bid item for work specified in A.

stp-450-010 (20170615)

Use on projects with 10,000 tons or greater, for all types of mixes. Review with region for use on quantities less than 10,000 tons.

82. stp-460-020 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.

https://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

https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/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 sublot. Testing in a previously accepted sublot will not be used to recalculate a new lot density.

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

(4) Retesting and acceptance of replaced pavement will be 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 sublot and lot densities.

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

B.5 Department Testing

B.5.1 Verification Testing

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

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

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

(4) If the verification sublot average is more than one percent below the specified target density, compare the QC and QV sublot averages. If the QV sublot average is within 1.0 lb/ft^3 of the QC sublot average, use the QC tests for acceptance.

(5) If the first QV/QC sublot average comparison shows a difference of more than 1.0 lb/ft^3 each tester will perform an additional set of tests within that sublot. Combine the additional tests with the original set of tests to compute a new sublot average for each tester. If the new QV and QC sublot averages compare to within 1.0 lb/ft^3, use the original QC tests for acceptance.

(6) If the QV and QC sublot averages differ by more than 1.0 lb/ft^3 after a second set of tests, resolve the difference with dispute resolution specified in B.6. The engineer will notify the contractor immediately when density deficiencies or testing precision exceeding the allowable differences are observed.

B.5.2 Independent Assurance Testing

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

B.6 Dispute Resolution

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

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

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

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

B.7 Acceptance

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

C (Vacant)

D (Vacant)

E Payment

E.1 QMP Testing

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

E.2 Disincentive for HMA Pavement Density

(1) The department will administer density disincentives 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)

460-030 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP for SMA pavements. It covers the following:

1. SMA additional construction requirements

2. Test Strip requirements

SPV.0105.XX Material Transfer Vehicle Project XXXX-XX-XX, Item 460.0115.S HMA Pavement Test Strip Volumetrics, Item 460.0120.S HMA Pavement Test Strip Density, and Item 460.2000 Incentive Density HMA Pavement pay items are required for SMA project.

Use STSP 460-020 QMP HMA Nuclear Density with this special provision as typically used for HMA projects within the region.

Delete the items not be used for your project from the title and from the table in section E Payment.

83. stp-460-030 HMA Pavement 4 SMA 58-28 H, Item 460.8424
HMA Pavement 5 SMA 58-28 H, Item 460.8425
HMA Pavement 4 SMA 58-34 H, Item 460.8444
HMA Pavement 5 SMA 58-34 H, Item 460.8445
HMA Pavement 4 SMA 58-28 V, Item 460.8624
HMA Pavement 5 SMA 58-28 V, Item 460.8625
HMA Pavement 4 SMA 58-34 V, Item 460.8644
HMA Pavement 5 SMA 58-34 V, Item 460.8645
HMA Pavement 4 SMA 58-28 E, Item 460.8824
HMA Pavement 5 SMA 58-28 E, Item 460.8825
HMA Pavement 4 SMA 58-34 E, Item 460.8844
HMA Pavement 5 SMA 58-34 E, Item 460.8845
HMA Pavement Test Strip Volumetrics, Item 460.0115.S
HMA Pavement Test Strip Density, Item 460.0120.S.

A Description

Conform to standard spec 450 and 460 except as modified in this special provision.

B (Vacant)

C Construction

Add the following to standard spec 450.3.1.3 to require transfer vehicle for SMA:

(2) Use a Material Transfer Vehicle when constructing SMA pavement.

Add the following to standard spec 450.3.1.5 to prohibit rubber-tire roller on SMA:

(3) Do not use a rubber-tired roller for compaction of SMA pavement.

Add the following to standard spec 460.3.3.2 to require and define approval criteria for SMA test strips:

(5) Construct a test strip according to CMM 8-15.13 to correlate nuclear gauges to pavement cores, confirm SMA in-place density using cores and determine mixture air voids. 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. The department will assess the contractor $2,000 for each instance according to Section E of this special provision if paving does not begin within 2 hours of the submitted start time, delaying the test strip. 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.

Construct the test strip at the beginning of work for each SMA mixture, for each layer and for each thickness. All SMA test strip material produced shall meet the requirements in Tables 460-1 and 460-2 and conform to the JMF limits presented herein except as follows:

ITEM	JMF Limits
Asphaltic content in percent[1]	- 0.5
VMA in percent[2]	- 1.0

Air Voids in percent	According to the SMA Test Strip Approval Criteria Below

[1] Asphalt content more than -0.5% below the JMF will be referee tested by BTS using automated extraction according to WisDOT Modified ASTM D8159.

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

The test strip shall remain in place and become part of the completed pavement when acceptably produced, acceptably compacted, and meets finish and smoothness requirements. CMM 8-15 describes the SMA density and volumetric testing tolerances required for the test strip.

(6) The test strip is to be treated as a single/separate lot and will have densities and pay adjustments calculated accordingly. The department will test one of the two split samples for volumetrics to determine test strip approval. If the QV air void sample is outside of the limits for 100% pay (i.e. $3.2 \leq Va \leq 5.8$), dispute resolution according to CMM 8-36 will determine material conformance and payment for the test strip. If QV and QC test results exceed testing tolerances (0.015 for Gmm or Gmb), both retained split samples will be tested by BTS. In this case, additional investigation shall be conducted to identify the source of the difference between QV and QC data and BTS referee test data will be used to determine material conformance and pay.

Pay adjustments made as part of dispute resolution on test strip material will be limited to the test strip and will not extend to material placed during main production nor will pay adjustments made on main production extend into the test strip. The department will notify the contractor within 24 hours of the start of test strip construction regarding approval to proceed with paving beyond the test strip. The department will evaluate mixture air voids, test strip density, and nuclear gauge to core correlation in determining test strip approval and material conformance according to the following:

SMA Test Strip Approval Criteria

Approval / Material Conformance[1]	QV Air Voids	Average Density of All Cores[2]	Outcome of Test Strip for Contractor
Approved / Material Conforming	$3.2 \leq Va \leq 5.8$	≥ 93.0 %	Proceed with production
Test Strip Approved / Material Nonconforming	$2.8 \leq Va \leq 3.2$ or $5.8 < Va \leq 6.2$	≥ 91.0 %	Propose solution and proceed with production. Payment for material will be based on BTS referee tests.
Test Strip Not Approved / Material Nonconforming	$2.5 \leq Va < 2.8$ or $6.2 < Va \leq 6.5$	< 91.0 %	Stop production, submit cause and solution, make additional 500-ton test strip. Payment for material will be based on BTS referee tests.
Test Strip and Material are Unacceptable[3]	$Va < 2.5$ or $Va > 6.5$	< 90.0 %	Stop production, submit cause and solution, make additional 500-ton test strip, and complete new core to nuclear density gauge correlation

[1] The overall result of each test strip will coincide with the more restrictive result from air voids or density.

[2] Individual nuclear density test results more than 3.0% below the minimum density requirement must be addressed according to CMM 8-15.11.

[3] Unacceptable material will be removed and replaced at no additional cost to the department. Alternatively, the engineer may allow the material to remain in place with a 50 percent payment factor. Material allowed to remain in place requires another test strip prior to additional paving.

(7) An acceptable core to nuclear density gauge correlation must be completed by both the contractor and department according to CMM 8-15 as part of the test strip.

(8) A maximum of two test strips will be allowed to remain in place per layer per contract. 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 each additional test strip according to Section E of this special provision.

D Measurement

Add the following to standard spec 460.4:

(2) The department will measure HMA Pavement Test Strip Volumetrics and HMA Pavement Test Strip Density as each unit of work, acceptably completed, as described in CMM 8-15. Material quantities will be determined according to standard spec 450.4.

E Payment

Replace standard spec 460.5.1 with the following:

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

ITEM NUMBER	DESCRIPTION	UNIT
460.8424	HMA Pavement 4 SMA 58-28 H	TON
460.8425	HMA Pavement 5 SMA 58-28 H	TON
460.8444	HMA Pavement 4 SMA 58-34 H	TON
460.8445	HMA Pavement 5 SMA 58-34 H	TON
460.8624	HMA Pavement 4 SMA 58-28 V	TON
460.8625	HMA Pavement 5 SMA 58-28 V	TON
460.8644	HMA Pavement 4 SMA 58-34 V	TON
460.8645	HMA Pavement 5 SMA 58-34 V	TON
460.8824	HMA Pavement 4 SMA 58-28 E	TON
460.8825	HMA Pavement 5 SMA 58-28 E	TON
460.8844	HMA Pavement 4 SMA 58-34 E	TON
460.8845	HMA Pavement 5 SMA 58-34 E	TON
460.0115.S	HMA Pavement Test Strip Volumetrics	EACH
460.0120.S	HMA Pavement Test Strip Density	EACH

Payment for SMA is full compensation for providing SMA mixture designs; for preparing foundation; for volumetric and density testing and aggregate source testing; for asphalt binder from recycled sources, for asphalt binder modification or processes, and addition of fibers, fines, or filler.

Payment for HMA Pavement Test Strip Volumetrics is full compensation for volumetric sampling, splitting, and testing; for proper labeling, handling, and retention of split samples.

Payment for HMA Pavement 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.

The department will pay separately for a material transfer vehicle.

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 standard spec 460.3.3.2(5) as modified herein, 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.

stp-460-030 (20191121)

460-040 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP for all HMA PWL QMP contracts.

Follow design guidance in FDM 19-21-10.

Insert Appendix A - Test Methods & Sampling for HMA PWL QMP Projects with this STSP. It covers the following:

1. ***Nuclear density gauge to core correlation.***
2. ***Core hole filling procedures.***

84. stp-460-040 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:

Sample Number	Production Interval (tons)
1	50 to 1/3 T
2	1/3 T to 2/3 T
3	2/3 T 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/ft^3. 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/ft^3. 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]

	MIXTURE TYPE	
LAYER	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 the contract unit price according to Section E	Construct additional Volumetrics or Density test strip as necessary

[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 $\geq$ 75
iii. Density PWL value $\geq$ 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

PERCENT WITHIN LIMITS (PWL)	*PAYMENT FACTOR, PF (percent of $65/ton)*
≥ 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:

Pay Adjustment = (PF-100)/100 x (WP) x (tonnage) x ($65/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:

Parameter	WP
Air Voids	0.5
Density	0.5

Individual Pay Factors for each air voids ($PF_{air\ voids}$) and density ($PF_{density}$) will be determined. $PF_{air\ voids}$ will be multiplied by the total tonnage produced (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.

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460-050 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP for all HMA PWL QMP contracts. Include the HMA Pavement Longitudinal Joint Density SPV on all HMA PWL QMP contracts.

Follow design guidance in FDM 19-21-10.

Insert Appendix A - Test Methods & Sampling for HMA PWL QMP Projects with this STSP. It covers the following:

1. ***Nuclear density testing.***
2. ***Sampling of HMA material.***
3. ***Calculation of mainline tonnage.***

85. stp-460-050 HMA Pavement Percent Within Limits (PWL) QMP.

A Description

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

B Materials

Conform to the requirements of standard spec 450, 455, and 460 except where superseded by this special provision. The department will allow only one mix design for each HMA mixture type per layer required for the contract, unless approved by the engineer. The use of more than one mix design for each HMA pavement layer will require the contractor to construct a new test strip in accordance with HMA Pavement Percent Within Limits (PWL) QMP Test Strip Volumetrics and HMA Pavement Percent Within Limits (PWL) QMP Test Strip Density articles at no additional cost to the department.

Replace standard spec 460.2.8.2.1.3.1 Contracts with 5000 Tons of Mixture or Greater with the following:

460.2.8.2.1.3.1 Contracts under Percent within Limits

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

(2) Obtain random samples and perform tests according to this special provision and further defined in Appendix A: *Test Methods & Sampling for HMA PWL QMP Projects*. Obtain HMA mixture samples from trucks at the plant. For the sublot in which a QV sample is collected, discard the QC sample and test a split of the QV sample.

(3) Perform sampling from the truck box and three-part splitting of HMA samples according to CMM 8-36. Sample size must be adequate to run the appropriate required tests in addition to one set of duplicate tests that may be required for dispute resolution (i.e., retained). This requires sample sizes which yield three splits for all random sampling per sublot. All QC samples shall provide the following: QC, QV, and Retained. The contractor shall take possession and test the QC portions. The department will observe the splitting and take possession of the samples intended for QV testing (i.e., QV portion from each sample) and the Retained portions. Additional sampling details are found in Appendix A. Label samples according to CMM 8-36. Additional handling instructions for retained samples are found in CMM 8-36.

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

- Blended aggregate gradations in accordance with AASHTO T 30
- Asphalt content (AC) in percent determined by ignition oven method according to AASHTO T 308 as modified in CMM 8-36.6.3.6, chemical extraction according to AASHTO T 164 Method A or B, or automated extraction according to ASTM D8159 as modified in CMM 8-36.6.3.1.
- Bulk specific gravity (Gmb) of the compacted mixture according to AASHTO T 166 as modified in CMM 8-36.6.5.
- Maximum specific gravity (Gmm) according to AASHTO T 209 as modified in CMM 8-36.6.6
- Air voids (V_a) by calculation according to AASHTO T 269.

- Voids in Mineral Aggregate (VMA) by calculation according to AASHTO R35.

(5) Lot size shall consist of 3750 tons with sublots of 750 tons. Test each design mixture at a frequency of 1 test per 750 tons of mixture type produced and placed as part of the contract. Add a random sample for any fraction of 750 tons at the end of production for a specific mixture design. Partial lots with less than three sublot tests will be included into the previous lot for data analysis and pay adjustment. Volumetric lots will include all tonnage of mixture type under specified bid item unless otherwise specified in the plan.

(6) Conduct field tensile strength ratio tests according to AASHTO T283, without freeze-thaw conditioning cycles, on each qualifying mixture in accordance with CMM 8-36.6.14. Test each full 50,000-ton production increment, or fraction of an increment, after the first 5,000 tons of production. Perform required increment testing in the first week of production of that increment. If field tensile strength ratio values are below the spec limit, notify the engineer. The engineer and contractor will jointly determine a corrective action.

Delete standard spec 460.2.8.2.1.5 and 460.2.8.2.1.6.

Replace standard spec 460.2.8.2.1.7 Corrective Action with the following:

460.2.8.2.1.7 Corrective Action

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

ITEM	ACTION LIMITS	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	
AC in percent[1]	-0.3	-0.5
Va		- 1.5 & +2.0
VMA in percent[2]	- 0.5	-1.0

[1] The department will not adjust pay based on QC AC in percent test results; however corrective action will be applied to nonconforming material according to 460.2.8.2.1.7(3) as modified herein.
[2] VMA limits based on minimum requirement for mix design nominal maximum aggregate size in table 460-1.

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

(3) Notify the engineer if any individual test result falls outside the action limits, investigate the cause and take corrective action to return to within action limits. If two consecutive test results fall outside the action limits, stop production. Production may not resume until approved by the engineer. Additional QV samples may be collected upon resuming production, at the discretion of the engineer.

(4) For any additional tests outside the random number testing conducted for volumetrics, the data collected will not be entered into PWL calculations. Additional QV tests must meet acceptance limits or be subject to production stop and/or remove and replace.

(5) Remove and replace unacceptable material at no additional expense to the department. Unacceptable material is defined as any individual QC or QV tests results outside the acceptance limits or a PWL value < 50. The engineer may allow such material to remain in place with a price reduction. The department will pay for such HMA Pavement allowed to remain in place at 50 percent of the contract unit price.

Replace standard spec 460.2.8.3.1.2 Personnel Requirements with the following:

460.2.8.3.1.2 Personnel Requirements

(1) The department will provide at least one HTCP-certified Transportation Materials Sampling (TMS) Technician, to observe QV sampling of HMA mixtures.

(2) Under departmental observation, a contractor TMS technician shall collect and split samples.

(3) A department HTCP-certified Hot Mix Asphalt, Technician I, Production Tester (HMA-IPT) technician will ensure that all sampling is performed correctly and conduct testing, analyze test results, and report resulting data.

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

Replace standard spec 460.2.8.3.1.4 Department Verification Testing Requirements with the following:

460.2.8.3.1.4 Department Verification Testing Requirements

(1) HTCP-certified department personnel will obtain QV random samples by directly supervising HTCP-certified contractor personnel sampling from trucks at the plant. Sample size must be adequate to run the appropriate required tests in addition to one set of duplicate tests that may be required for dispute resolution (i.e., retained). This requires sample sizes which yield three splits for all random sampling per sublot. All QV samples shall furnish the following: QC, QV, and Retained. The department will observe the splitting and take possession of the samples intended for QV testing (i.e., QV portion from each sample) and the Retained portions. The department will take possession of retained samples accumulated to date each day QV samples are collected. The department will retain samples until surpassing the analysis window of up to 5 lots, as defined in standard spec 460.2.8.3.1.7(2) of this special provision. Additional sampling details are found in Appendix A.

(2) The department will verify product quality using the test methods specified here in standard spec 460.2.8.3.1.4(3). The department will identify test methods before construction starts and use only those methods during production of that material unless the engineer and contractor mutually agree otherwise.

(3) The department will perform all testing conforming to the following standards:

- Bulk specific gravity (Gmb) of the compacted mixture according to AASHTO T 166 as modified in CMM 8-36.6.5.
- Maximum specific gravity (Gmm) according to AASHTO T 209 as modified in CMM 8-36.6.6.
- Air voids (Va) by calculation according to AASHTO T 269.
- Voids in Mineral Aggregate (VMA) by calculation according to AASHTO R 35.
- Asphalt Content (AC) in percent determined by ignition oven method according to AASHTO T 308 as modified in CMM 8-36.6.3.6, chemical extraction according to AASHTO T 164 Method A or B, or automated extraction according to ASTM D8159 as modified in CMM 8-36.6.3.1.

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

Delete standard spec 460.2.8.3.1.6.

Replace standard spec 460.2.8.3.1.7 Dispute Resolution with the following:

460.2.8.3.1.7 Data Analysis for Volumetrics

(1) Analysis of test data for pay determination will be contingent upon QC and QV test results. Statistical analysis will be conducted on Gmm and Gmb test results for calculation of Va. If either Gmm or Gmb analysis results in non-comparable data as described in 460.2.8.3.1.7(2), subsequent testing will be performed for both parameters as detailed in the following paragraph.

(2) The engineer, upon completion of the first 3 lots, will compare the variances (F-test) and the means (t-test) of the QV test results with the QC test results. Additional comparisons incorporating the first 3 lots of data will be performed following completion of the 4th and 5th lots (i.e., lots 1-3, 1-4, and 1-5). A rolling window of 5 lots will be used to conduct F & t comparison for the remainder of the contract (i.e., lots 2-6, then lots 3-7, etc.), reporting comparison results for each individual lot. Analysis will use a set alpha value

of 0.025. If the F- and t-tests report comparable data, the QC and QV data sets are determined to be statistically similar and QC data will be used to calculate the Va used in PWL and pay adjustment calculations. If the F- and t-tests result in non-comparable data, proceed to the *dispute resolution* steps found below. Note: if both QC and QV Va PWL result in a pay adjustment of 102% or greater, dispute resolution testing will not be conducted. Dispute resolution via further investigation is as follows:

[1] The Retained portion of the split from the lot in the analysis window with a QV test result furthest from the QV mean (not necessarily the sublot identifying that variances or means do not compare) will be referee tested by the bureau's AASHTO accredited laboratory and certified personnel. All previous lots within the analysis window are subject to referee testing and regional lab testing as deemed necessary. Referee test results will replace the QV data of the sublot(s).

[2] Statistical analysis will be conducted with referee test results replacing QV results.

i. If the F- and t-tests indicate variances and means compare, no further testing is required for the lot and QC data will be used for PWL and pay factor/adjustment calculations.

ii. If the F- and t-tests indicate non-comparable variances or means, the Retained portion of the random QC sample will be tested by the department's regional lab for the remaining 4 sublots of the lot which the F- and t- tests indicate non-comparable datasets. The department's regional lab and the referee test results will be used for PWL and pay factor/adjustment calculations. Upon the second instance of non-comparable variance or means and for every instance thereafter, the department will assess a pay reduction for the additional testing of the remaining 4 sublots at $2,000/lot under the HMA Regional Lab Testing administrative item.

[3] The contractor may choose to dispute the regional test results on a lot basis. In this event, the retained portion of each sublot will be referee tested by the department's AASHTO accredited laboratory and certified personnel. The referee Gmm and Gmb test results will supersede the regional lab results for the disputed lot.

i. If referee testing results in an increased calculated pay factor, the department will pay for the cost of the additional referee testing.

ii. If referee testing of a disputed lot results in an equal or lower calculated pay factor, the department will assess a pay reduction for the additional referee testing at $2,000/lot under the Referee Testing administrative item.

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

(4) The department will determine mixture conformance and acceptability by analyzing referee test results, reviewing mixture data, and inspecting the completed pavement according to the standard spec, this special provision, and accompanying Appendix A.

(5) Unacceptable material (i.e., resulting in a PWL value less than 50 or individual QC or QV test results not meeting the Acceptance Requirements of 460.2.8.2.1.7 as modified herein) will be referee tested by the bureau's AASHTO accredited laboratory and certified personnel and those test results used for analysis. Such material may be subject to remove and replace, at the discretion of the engineer. If the engineer allows the material to remain in place, it will be paid at 50% of the HMA Pavement contract unit price. Replacement or pay adjustment will be conducted on a sublot basis. If an entire PWL sublot is removed and replaced, the test results of the newly placed material will replace the original data for the sublot. Any remove and replace shall be performed at no additional cost to the department. Testing of replaced material must include a minimum of one QV result. [Note: If the removed and replaced material does not result in replacement of original QV data, an additional QV test will be conducted and under such circumstances will be entered into the HMA PWL Production spreadsheet for data analysis and pay determination.] The quantity of material paid at 50% the contract unit price will be deducted from PWL pay adjustments, along with accompanying data of this material.

Delete standard spec 460.2.8.3.1.8 Corrective Action.

C Construction

Replace standard spec 460.3.3.2 Pavement Density Determination with the following:

460.3.3.2 Pavement Density Determination

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

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

(3) A lot is defined as 7500 lane feet with sublots of 1500 lane feet (excluding shoulder, even if paved integrally) and placed within a single layer for each location and target maximum density category indicated in table 460-3. The contractor is required to complete three tests randomly per sublot and the department will randomly conduct one QV test per sublot. A partial quantity less than 750 lane feet will be included with the previous sublot. Partial lots with less than three sublots will be included in the previous lot for data analysis/acceptance and pay, by the engineer. If density lots/sublots are determined prior to construction of the test strip, any random locations within the test strip shall be omitted. Exclusions such as shoulders and appurtenances shall be tested and recorded in accordance with 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. Offsets will not be applied to nuclear density gauge readings for shoulders or appurtenances. Unacceptable shoulder material will be handled according to standard spec 460.3.3.1 and CMM 8-15.11.

(4) The three QC locations per sublot represent the outside, middle, and inside of the paving lane. The QC density testing procedures are detailed in Appendix A.

(5) QV nuclear testing will consist of one randomly selected location per sublot. The QV density testing procedures will be the same as the QC procedure at each testing location and are also detailed in Appendix A.

(6) An HTCP-certified nuclear density technician (NUCDENSITYTEC-I) shall identify random locations and perform the testing for both the contractor and department. The responsible certified technician shall ensure that sample location and testing is performed correctly, analyze test results, and provide density results to the contractor weekly, or at the completion of each lot.

(7) For any additional tests outside the random number testing conducted for density, the data collected will not be entered into PWL calculations. However, additional QV testing must meet the tolerances for material conformance as specified in the standard specification and this special provision. If additional density data identifies unacceptable material, proceed as specified in CMM 8-15.11.

Replace standard spec 460.3.3.3 Waiving Density Testing with Acceptance of Density Data with the following:

460.3.3.3 Analysis of Density Data

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

(2) As random density locations are paved, the data will be recorded in the HMA PWL Production Spreadsheet for analysis in chronological order. The engineer, upon completion of the analysis lot, will compare the variances (F-test) and the means (t-test) of the QV test results with the QC test results. Analysis will use a set alpha value of 0.025.

i. If the F- and t-tests indicate variances and means compare, the QC and QV data sets are determined to be statistically similar and QC data will be used for PWL and pay adjustment calculations.

ii. If the F- and t-tests indicate variances or means do not compare, the QV data will be used for subsequent calculations.

(3) The department will determine mixture density conformance and acceptability by analyzing test results, reviewing mixture data, and inspecting the completed pavement according to standard spec, this special provision, and accompanying Appendix A.

(4) Density resulting in a PWL value less than 50 or not meeting the requirements of 460.3.3.1 (any individual density test result falling more than 3.0 percent below the minimum required target maximum density as specified in standard spec Table 460-3) is unacceptable and may be subject to remove and replace at no additional cost to the department, at the discretion of the engineer.

i. Replacement may be conducted on a sublot basis. If an entire PWL sublot is removed and replaced, the test results of the newly placed material will replace the original data for the sublot.

ii. Testing of replaced material must include a minimum of one QV result. [Note: If the removed and replaced material does not result in replacement of original QV data, an additional QV test must be conducted and under such circumstances will be entered into the data analysis and pay determination.]

iii. If the engineer allows such material to remain in place, it will be paid for at 50% of the HMA Pavement contract unit price. The extent of unacceptable material will be addressed as specified in CMM 8-15.11. The quantity of material paid at 50% the contract unit price will be deducted from PWL pay adjustments, along with accompanying data of this material.

D Measurement

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

E Payment

Replace standard spec 460.5.2 HMA Pavement with the following:

460.5.2 HMA Pavement

460.5.2.1 General

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

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

460.5.2.2 Calculation of Pay Adjustment for HMA Pavement using PWL

(1) Pay adjustments will be calculated using 65 dollars per ton of HMA pavement. The HMA PWL Production Spreadsheet, including data, will be made available to the contractor by the department as soon as practicable upon completion of each lot. The department will pay for measured quantities of mix based on this price multiplied by the following pay adjustment calculated in accordance with the HMA PWL Production Spreadsheet:

PAY FACTOR FOR HMA PAVEMENT AIR VOIDS & DENSITY

PERCENT WITHIN LIMITS (PWL)	*PAYMENT FACTOR, PF (percent of $65/ton)*
≥ 90 to 100	PF = ((PWL – 90) * 0.4) + 100
≥ 50 to < 90	(PWL * 0.5) + 55
<50	50%[1]

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

[1] Any material resulting in PWL value less than 50 shall be removed and replaced unless the engineer allows 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 shall be in accordance with standard spec Table 460-3. Pay adjustment will be determined on a lot basis and will be computed as shown in the following equation.

Pay Adjustment = (PF-100)/100 x (WP) x (tonnage) x ($65/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:

Parameter	WP
Air Voids	0.5
Density	0.5

Individual Pay Factors for each air voids ($PF_{air\ voids}$) and density ($PF_{density}$) will be determined. $PF_{air\ voids}$ will be multiplied by the total tonnage placed (i.e., from truck tickets), and $PF_{density}$ will be multiplied by the calculated tonnage used to pave the mainline only (i.e., travel lane excluding shoulder) as determined in accordance with Appendix A.

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

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

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

The department will administer a disincentive under the Disincentive HMA Binder Content administrative item for each individual QV test result indicating asphalt binder content below the Action Limit in 460.2.8.2.1.7 presented herein. The department will adjust pay per sublot of mix at 65 dollars per ton of HMA pavement multiplied by the following pay adjustment calculated according to the HMA PWL Production Spreadsheet:

AC Binder Relative to JMF	Pay Adjustment / Sublot
-0.4% to -0.5%	75%
More than -0.5%	50%[1]

[1] Any material resulting in an asphalt binder content more than 0.5% below the JMF AC content shall be removed and replaced unless the engineer allows 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. Such material will be referee tested by the department's AASHTO accredited laboratory and HTCP certified personnel using automated extraction according to automated extraction according to ASTM D8159 as modified in CMM 8-36.6.3.1.

Note: PWL value determination is further detailed in the *Calculations* worksheet of the HMA PWL Production spreadsheet.

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86. stp-460-055 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

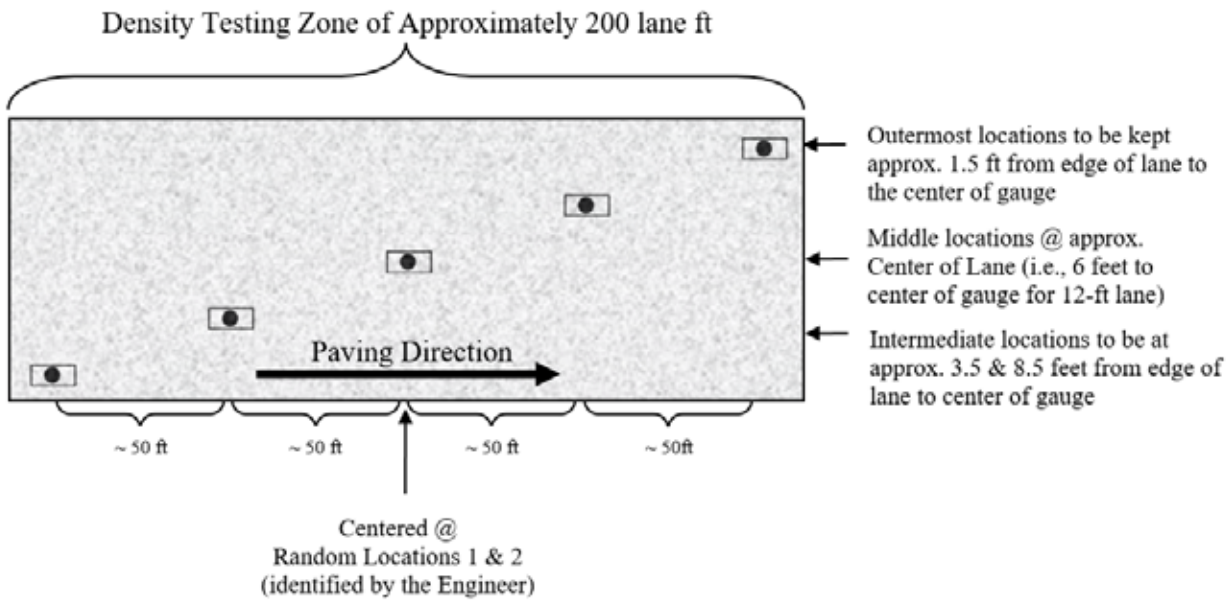


Figure 1: Nuclear/Core Correlation Location Layout

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:

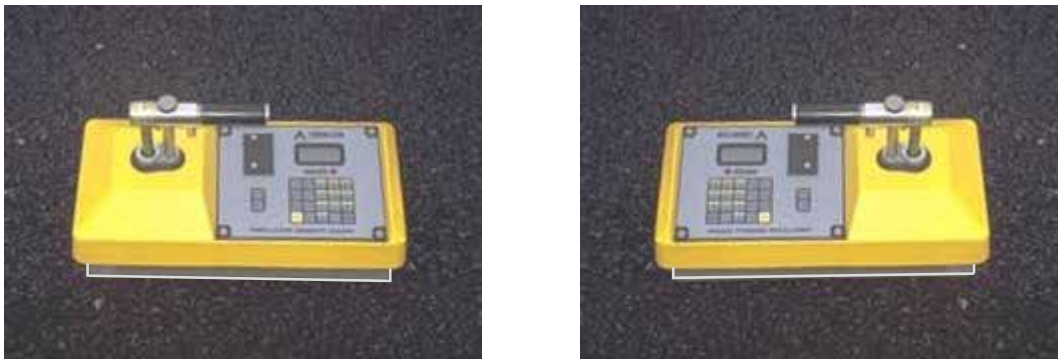
- two one-minute nuclear density gauge readings for QC team*
- two one-minute nuclear density gauge readings for QV team*
- pavement core sample

*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:



(a) (b)

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 sublot, with a sublot defined as 1500 lane feet. The three locations will represent the outside, middle, and inside of the paving lane (i.e., the lane width will be divided into thirds as shown by the dashed longitudinal lines in Figure 3 and random numbers will be used to identify the specific transverse location within each third in accordance with CMM 8-15). Longitudinal locations within each sublot shall be determined with 3 independent random numbers. 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 sublot. 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 sublot density testing layout is depicted in Figure 4, with QC test locations shown as solid lines and QV as dashed.

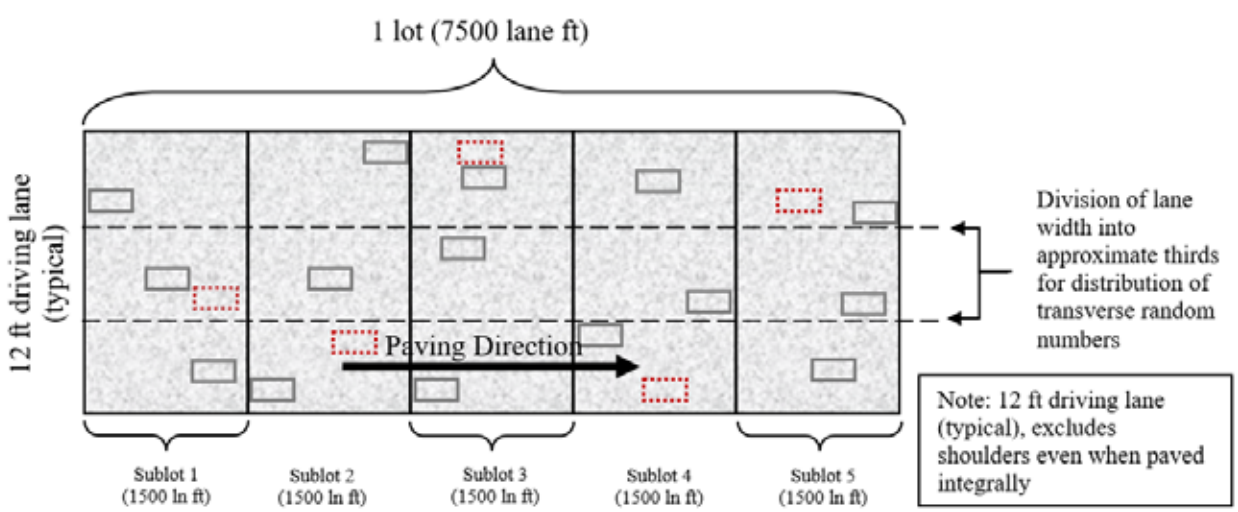


Figure 4: Locations of main lane HMA density testing (QC=solid lines, QV=dashed)

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 sublot 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 (sublot) 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 sublot. 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 sublot tonnage. This number will then be added to the final tonnage of the previous sublot to yield the approximate cumulative tonnage of when each sample is to be taken.

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

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 sublot 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 sublot 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 in 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 sublot eligible for density incentive or disincentive.

Solution:

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

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460-070 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use the Interlayer to mitigate reflective cracking in HMA overlays on existing PCC pavement. No not use on rubblized PCC. Use as a lower layer of a multi-layer system in applications where lower maintenance is beneficial. Repair unstable slabs and joints with a lack of load transfer indicated by pumping. For roadways requiring cross slope correction, a leveling layer can be placed below the Interlayer.

Each project should include a reference section to evaluate the performance of the pavement without an Interlayer. All layers placed on the reference section will be of the HMA mix design used on the surface of the project unless otherwise approved by the engineer. If the surface course is SMA, an alternate HMA mix type with No. 4 or No. 5 gradation must be used for the lower layer of the reference section.

Use this STSP for Interlayer pavements. It covers the following:

1. ***Materials***
2. ***Aggregate Gradations and VMA Requirements***
3. ***Mixture Requirements***
4. ***Base Patching for HMA Interlayer***
5. ***Density Testing and Control Strip Requirements***

87. stp-460-070 HMA Pavement Interlayer, Item 460.4210.S; Base Patching Asphaltic for HMA Interlayer, Item 390.0500.S.

A Description

Conform to standard spec 390, 450 and 460 except as modified in this special provision.

Replace standard spec 460.1 with the following to describe Interlayer:

(1) This section describes HMA mixture design for Interlayer applications, providing and maintaining a quality management program for HMA mixtures, and constructing Interlayers. Unless specifically indicated otherwise, references within 460 to HMA also apply to Interlayers.

B Materials

Replace standard spec 460.2.2.1(1) with the following to specify that all aggregates used in Interlayer mixes are from department-approved sources:

(1) Provide all aggregates used in the Interlayer mix from a department-approved source as specified under standard spec 106.3.4.2. Obtain the engineer's approval of the aggregates before producing HMA mixtures.

Replace standard spec table 460-1 with the following to specify gradation master range and additional sieves for interlayer mixtures:

TABLE 460-1 AGGREGATE GRADATION MASTER RANGE AND VMA REQUIREMENTS

Sieve	% PASSING DESIGNATED SIEVES
	NOMINAL SIZE
9.5-mm	100
4.75-mm	80 - 100
2.36-mm	60 - 85
1.18-mm	40 - 70
0.60-mm	25 - 55
0.30-mm	15 – 35
0.15-mm	8 - 20
0.075-mm	6 - 14

% MINIMUM VMA	16.0

Replace standard spec 460.2.3 with the following to specify asphalt binders to be used:

(1) Furnish PG 58-34 asphalt binder with a designation of V (Very Heavy) or E (Extremely Heavy) as necessary to satisfy the Flexural Beam Fatigue Test (AASHTO T321) requirement of table 460-2 as modified herein. Do not change the PG binder grade without the engineer's written approval. The department will designate the grade of modified asphaltic binder in the contract.

Replace standard spec 460.2.5 with the following to describe Recycled Asphaltic Material use in Interlayers:

(1) No recycled asphaltic materials (FRAP, RAP, and RAS) shall be permitted in Interlayer mixtures.

Replace standard spec 460.2.7 with the following to specify design limits and requirements for Interlayer mixtures.

(1) For each HMA mixture type used under the contract, develop and submit an asphaltic mixture design according to CMM 8-66 and conforming to the requirements of table 460-1 and table 460-2. The department will review mixture designs and report the results of that review to the designer according to CMM 8-66.

(2) For each asphaltic mixture design, conduct Hamburg Wheel-Track testing according to AASHTO T324 and indirect tensile cracking test at intermediate temperature (CT-Index) according to ASTM D8225. Submit test results to the department with mix design submittal.

TABLE 460-2 MIXTURE REQUIREMENTS

Mixture type	Interlayer
LA Wear (AASHTO T96) 500 revolutions(max % loss)	13 40
Soundness (AASHTO T104) (sodium sulfate, max % loss)	12
Freeze/Thaw (AASHTO T103) (specified counties, max % loss)	15
Fractured Faces (ASTM 5821) (one face/2 face, % by count)	75/60
Flat & Elongated (ASTM D4791) (max %, by weight)	5 (5:1 ratio)
Fine Aggregate Angularity (AASHTO T304, method A, min)	45
Sand Equivalency (AASHTO T176, min)	40
Clay Lumps and Friable Particle in Aggregate (AASHTO T112)	<= 1%
Plasticity Index of Material Added to Mix Design as Mineral Filler (AASHTO T89/90)	<= 4

Gyrations for Ndes	50
Air Voids, %Va (%Gmm Ndes)	2.0 (98.0)
Dust to Binder Ratio (% passing 0.075mm/Pbe)	0.8 - 1.6
Voids filled with Binder (VFB or VFA, %)	70 - 95
Flexural Beam Fatigue Test, average cycles (AASHTO T321) [1]	>100,000

[1] The failure criterion for the Flexural Beam Fatigue Test (AASHTO T321) is 50% of the initial flexural stiffness measured at the 200th load cycle at 2,000 microstrain. Test two samples and average the two results for each mix design.

Replace standard spec 460.2.8.2.1.5 with the following to update JMF and warning limits for Interlayers:

(1) Conform to the following control limits for the JMF and warning limits based on a running average of the last 4 data points:

ITEM	JMF LIMITS	WARNING LIMITS
Percent passing given sieve:		
4.75-mm	+/- 5.0	+/- 4.0
2.36-mm	+/- 5.0	+/- 4.0
1.18-mm	+/- 4.0	+/- 3.0
0.60-mm	+/- 4.0	+/- 3.0
0.30 mm	+/- 4.0	+/- 3.0
0.15 mm	+/- 4.0	+/- 3.0
0.075-mm	+/- 2.0	+/- 1.5
Asphaltic content in percent	- 0.3	- 0.2
Air voids in percent	+/- 1.0	+/- 0.8
VMA in percent[1]	- 0.5	- 0.2

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

(2) Warning bands are defined as the area between the JMF limits and the warning limits.

C Construction

Replace standard spec 390.3.1 with the following to specify general construction guidance for asphaltic base patching for HMA Interlayer:

(1) Unless the contract provides otherwise, keep the road open to traffic during construction. If possible, restrict operations to one lane at a time. Perform work to cause the least possible inconvenience to traffic.

(2) Remove areas of existing concrete pavement, including existing patching or surfacing materials, at locations the plans show or the engineer directs in the field. Saw the connecting edges as true and perpendicular as possible as specified for sawing pavement in standard spec 690. Plunge mill joints and transverse cracks with loose concrete or concrete with developing spalling 2 inches from the opposing joint face or wider to a minimum depth of 2 inches and a maximum depth of 1/3 the concrete thickness, unless otherwise directed by the engineer. Remove the pavement without injury to the remaining pavement. Dispose of removed material as specified in standard spec 204.3.1.3.

(3) Prepare the foundation as specified in standard spec 211 using engineer-approved hand methods. Place the patch to the thickness of the contiguous pavement, including the existing asphaltic pavement or surfacing.

(4) For plunge milled areas, fill voids with asphaltic base patch according to standard spec 390.3.3, as modified herein. For all other base patching use the material the engineer directs.

Replace standard spec 390.3.3 to specify asphaltic base patching of plunge milled areas for HMA Interlayer:

(1) Construct as specified for asphaltic base under 315 except as modified here.

(2) Furnish 12.5 mm (No. 4) or 9.5 mm (No. 5) nominal size aggregate graded as specified in standard spec 460.2.2.3 and conform to the other material and mixture requirements specified for asphaltic surface in standard spec 465.

(2) Dump material outside the patch area, fill the patch in successive layers with shovels, and shape to the required grade and contour with rakes and lutes. Do not rake dumped material into the patch. The engineer will not require forms unless necessary to provide the required edge, grade, or alignment.

(3) Compact each layer with engineer-approved compaction equipment. Unless the engineer directs otherwise, compact each layer to a thickness of 6 inches or less. Roll the top layer until flush with the adjacent surface. Patching material that extends more than 1/4 inch above the milled surface shall be corrected before the leveling layer or Interlayer is placed.

(4) Do not open patches to traffic until they are hard enough to prevent rutting or displacement.

Replace standard spec 450.3.2.1.1 with the following to specify minimum paving temperature:

(1) Only place Interlayer asphaltic mixture when the air temperature approximately 3 feet above grade, in shade, and away from artificial heat sources is at least 50° F and the forecast is for rising temperatures. Place HMA pavement for projects in the northern asphalt zone between May 1 and October 15 inclusive and for projects in the southern asphalt zone between April 15 and November 1 inclusive. CMM 4-53 figure 2 defines asphalt zones. Notify the engineer at least one business day before paving.

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

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

(3) Place asphaltic mixture only on an existing pavement free of loose and foreign material. Do not place over frozen pavement, or where the roadbed is unstable.

(4) The surface shall be dry for at least 24 hours, and clean, prior to placement of the mixture. Work shall not begin when local conditions indicate rain is imminent.

Delete standard spec 450.3.2.1.2 to eliminate cold weather paving operations for Interlayer pavement.

Replace standard spec 455.3.2.1 with the following to specify Interlayer tack coat application requirements:

(1) Apply tack coat only when the air temperature is 45° F or more unless the engineer approves otherwise in writing. Before applying tack coat ensure that the surface is reasonably free of loose dirt, dust, or other foreign matter. Do not apply to surfaces with standing water. Do not apply if weather or surface conditions are unfavorable or before impending rains.

(2) Use tack material of the type and grade the contract specifies. The contractor may, with the engineer's approval, dilute tack material as allowed under standard spec 455.2.4. Provide calculations using the asphalt content as-received from the supplier and subsequent contractor dilutions to show that as-placed material has 50 percent or more residual asphalt content. Apply at 0.070 to 0.100 gallons per square yard, after dilution, unless the contract designates otherwise. The engineer may adjust the application rate based on surface conditions. Limit application each day to the area the contractor expects to pave during that day.

Replace standard spec 450.3.2.6.3 to specify compaction roller pattern determined by growth curve and subsequent coring for Interlayer mixes:

(1) Compact Interlayer mix using the roller pattern established during construction of a control strip. Use 2 or more rollers per paver if placing more than approximately 165 tons of mixture per hour.

(2) On the first day of production, construct a control strip under the direct observation of department personnel. After compacting the control strip with a minimum of 3 passes, mark the gauge outline and take a one-minute wet density measurement using a nuclear density gauge in back scatter mode at a single location. Take a density measurement at the same location after each subsequent pass. Continue compacting and testing until the increase in density is less than 1 pcf for 3 consecutive passes. Submit the final roller pattern to the engineer in writing. Once the roller pattern is established do not change the pattern or decrease the number, type, or weight of rollers without the engineer's written approval.

(3) After establishing the roller pattern, and under the direct observation of the engineer, cut at least one 4-inch diameter or larger core from the control strip density gauge outline. Prepare cores and determine density according to AASHTO T166. Dry cores after testing. Fill core holes and obtain engineer approval before opening to traffic. The department will maintain custody of cores throughout the entire sampling and testing process. The department will label cores, transport cores to testing facilities, witness testing, store dried cores, and provide subsequent verification testing.

(4) Collect 1 nonrandom three-part mix volumetric sample during construction of the control strip to be tested by the contractor with one split provided to the department. This contractor's test will be recorded on the control charts and the Gmm from this split sample will be used to determine the core density. If contractor test results for this split sample are not within the JMF limits presented in standard spec 460.2.8.2.1.5, as modified herein, take immediate corrective action.

(5) A minimum of one core per 3,000 lane feet or one per day will be collected and tested for density by the contractor. Add one core for each additional 3,000 lane feet or portion thereof per day. Report core density results to the engineer and BTS daily. The density of each sample during production will be determined by dividing the bulk specific gravity of each core sample by the four-point running average maximum specific gravity (Gmm according to CMM 8.36.6.6) from the previous day's production.

Replace standard spec 460.2.8.2.1.7(7) to further define conforming material and pay reduction based on individual test results for Interlayer mixes:

(7) If the air voids running average of 4 exceeds the JMF limits, the material is nonconforming. Remove and replace unacceptable material. The engineer will determine the quantity of material to replace based on the testing data using the methods in CMM 8-36 and an inspection of the completed pavement. If the engineer allows the mixture to remain in place, the department will pay for the mixture and asphaltic material as specified in standard spec 460.5.2.1, as modified herein. For Interlayer mix types, if one QC air voids test falls outside of the JMF limits, notify the department and consider corrective action. If two or more individual QC air voids tests within the four-point running average exceed the JMF limits, the material is nonconforming and subject to pay adjustment as specified in standard spec 460.5.2.1.

Replace standard spec 460.2.8.3.1.6 with the following to specify volumetric verifiction requirements:

(1) The engineer will provide test results to the contractor within 2 mixture-production days after obtaining the sample. The quality of the product is acceptably verified if it meets the following limits:

- Va is within a range of 1.0 to 3.0 percent.
- VMA is within minus 0.5 of the minimum requirement for the mix design nominal maximum aggregate size.
- Asphalt content is within minus 0.3 percent of the JMF.

(2) If QV test results are outside the specified limits, the engineer will investigate immediately through dispute resolution procedures. The engineer may stop production while the investigation is in progress if the potential for a pavement failure is present.

(3) If production continues for that mixture design, the engineer will provide additional retained sample testing at the frequency provided for in CMM 8-36. This supplemental testing will continue until the material meets allowable differences or as the engineer and contractor mutually agree.

Replace standard spec 460.3.1 with the following to remove standard bid item encoding:

(1) Construct Interlayer pavement of the type the bid item indicates encoded as follows:

HMA Pavement Interlayer

(2) Construct HMA pavement conforming to the general provisions of standard spec 450.3.

Replace standard spec 460.3.2 with the following to specify Interlayer plan thickness:

(1) Provide the plan thickness for Interlayer mixtures at 1.0 inch.

Replace standard spec 460.3.3.1 and 460.3.3.2 with the following to specify density requirements for Interlayers:

(1) Compact Interlayer mixture according to standard spec 450.3.2.6.3, as modified herein.

Delete standard spec 460.5.2.2 and 460.5.2.3 to remove density incentives and disincentives for Interlayer pavement.

D Measurement

Replace standard spec 390.4 with the following:

(1) The department will measure Base Patching Asphaltic for HMA Pavement Interlayer as a single lump sum for the project, acceptably completed.

Replace standard spec 460.4 with the following:

(1) The department will measure the HMA Pavement Interlayer bid items, acceptably completed by the ton, as specified in standard spec 450.4.

E Payment

Replace standard spec 390.5 with the following:

(1) The department will pay for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
390.0500.S	Base Patching Asphaltic for HMA Interlayer	LS

(2) Payment for Base Patching Asphaltic for HMA Interlayer is full compensation for removing old pavement; for preparing the foundation; for providing and compacting asphaltic mixture, including the asphaltic material.

Replace standard spec 460.5.1 with the following:

(1) The department will pay for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
460.4210.S	HMA Pavement Interlayer	TON

(2) Payment for HMA Pavement Interlayer is full compensation for providing mixture designs; for preparing foundation; for performance testing, for volumetric and density testing and aggregate source testing; for establishing the compaction roller pattern; for asphalt binder modification or processes, and addition of fibers, fines, or filler.

(3) Material placed in the lower layer of the reference section will be paid with the same bid item as the surface mix unless the surface mix is SMA. If the surface mix is SMA an alternative mix type with a No. 4 or No. 5 gradation will be used as the lower layer for the control strip.

Replace standard spec 460.5.2.1 with the following to modify mixture pay adjustments for Interlayer pavements:

(1) The department will pay for the HMA Interlayer bid items at the contract unit price subject to one or more of the following adjustments:

1. Reduced payment for nonconforming QMP HMA mixtures as specified in standard spec 460.2.8.2.1.7, as modified herein.

(2) Payment for the HMA Pavement bid items is full compensation for providing HMA pavement including binder; for mixture design; for preparing the foundation; and for QMP and aggregate source testing.

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

(4) The department will administer pay reduction for nonconforming QMP mixture under the Nonconforming QMP HMA Mixture administrative item. The department will reduce pay based on the contract unit price for the HMA Pavement bid item.

(5) The department will reduce pay for nonconforming QMP HMA mixtures as specified in standard spec 460.2.8.2.1.7, starting from the stop point to the point when the running average of 4 is back inside the warning limits. The engineer will determine the quantity of material subject to pay reduction based on the testing data and an inspection of the completed pavement. The department will reduce pay as follows:

PAYMENT FOR MIXTURE[1] [3] [4]

ITEM	PRODUCED WITHIN WARNING BANDS	PRODUCED OUTSIDE JMF LIMITS
Gradation	90%	75%
Asphalt Content[5]	___	___
Air Voids	70%	50%
VMA	90%	75%

[1] For projects or plants where the total production of each mixture design requires less than 4 tests refer to CMM 8-36.

[2] If Interlayer material is nonconforming for air voids as defined in standard spec 460.2.8.2.1.7(7) as modified herein, the department will pay 80% of the contract unit price for the material from the individual point(s) where a test is outside the JMF limit until another individual QV or QC test is within the JMF limits.

[3] Payment is in percent of the contract unit price for the HMA Pavement bid item. The department will reduce pay based on the nonconforming property with lowest percent pay. If the quantity of material subject to pay adjustment based on the running average of 4 is also subject to pay adjustment resulting from dispute resolution under standard spec 460.2.8.3.1.7, or is nonconforming for air voids as defined in standard spec 460.2.8.2.1.7(7) as modified herein, the department will apply the single pay adjustment resulting in the lowest percent pay.

[4] In addition to any pay adjustment listed in the table above, the department will adjust pay for nonconforming binder under the Nonconforming QMP Asphaltic Material administrative item. The department will deduct 25 percent of the contract unit price of the HMA Pavement bid item per ton of pavement placed with nonconforming PG binder the engineer allows to remain in place.

[5] The department will not adjust pay based on a running average of 4 asphalt content tests; however, corrective action will be applied to nonconforming material according to standard spec 460.2.8.2.1.7.

(6) When using CMM 8-36 for QV dispute resolution of HMA Pavement Interlayer material apply the following:

- Interlayer 100% pay requires: Va = 1.0 - 3.0%, VMA below minimum < 0.5%

460-075 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

When specifying this item, only use in conjunction with HMA Pavement Percent Limits (PWL) QMP. Designers should not specify joint heaters, echelon paving, wedge joint removal, or other specified joint treatments.

When estimating the quantity for 460.2007 Incentive Density HMA Pavement Longitudinal Joints, multiply the length of the applicable joints – as defined in Section 1A herein – by 2 (for both sides of the joint) and then multiply by $0.20 (average incentive is anticipated to be about half of the $0.40 maximum incentive).

88. stp-460-075 HMA Pavement Longitudinal Joint Density.

A Description

This special provision incorporates longitudinal joint density requirements into the contract and describes the data collection, acceptance, and procedure used for determination of pay adjustments for HMA pavement longitudinal joint density. Pay adjustments will be made on a linear foot basis, as applicable per pavement layer and paving lane. Applicable longitudinal joints are defined as those between any two or more traffic lanes including full-width passing lanes, turn lanes, or auxiliary lanes more than 1500 lane feet. This excludes any joint with one side defined as a shoulder and ramp lanes of any length. Longitudinal joints placed during a test strip will be tested for information only to help ensure the roller pattern will provide adequate longitudinal joint density during production. Longitudinal joint density test results collected during a test strip are not eligible for pay adjustment.

Pay is determined according to standard spec 460, HMA Pavement Percent Within Limits QMP special provisions, and as modified within.

B Materials

Revise standard spec 460.3.3.1(1) table 460-3 by adding footnotes [6] & [7]:

TABLE 460-3 MINIMUM REQUIRED DENSITY[1][6][7]

LOCATION	LAYER	PERCENT OF TARGET MAXIMUM DENSITY		
		MIXTURE TYPE		
		LT and MT	HT	SMA[5]
TRAFFIC LANES[2]	LOWER	93.0[3]	93.0[4]	___
	UPPER	93.0	93.0	___
SHOULDERS & APPURTENANCES	LOWER	91.0	91.0	___
	UPPER	92.0	92.0	___

The table values are for average lot density. If any individual 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 according to 460.3.3.2 as modified herein.

Includes side roads, crossovers, turn lanes, ramps, parking lanes, and bike lanes as determined by the engineer.

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

Minimum reduced by 1.0 percent for a lower layer constructed directly on crushed aggregate or recycled base courses.

The minimum required densities for SMA mixtures are determined according to CMM 8-15.

[6] Minimum reduced by 1.5 percent at longitudinal joint with lateral confinement (i.e., confined)

[7] Minimum reduced by 3.0 percent at longitudinal joint having no lateral confinement (i.e., unconfined)

C Construction

Add the following to standard spec 460.3.3.2:

(5) Establish companion density locations at each applicable joint. Each companion location shares longitudinal stationing with a QC or QV density location within each sublot and is located transversely with the center of the gauge 6-inches from the final joint edge of the paving area. Sublot and lot numbering remains the same as mainline densities, however, in addition to conventional naming, joint identification must clearly indicate “M” for inside/median side of lane or “O” for outside shoulder side of lane, as well as “U” for an unconfined joint or “C” for a confined joint (e.g., XXXXX-MC or XXXXX-OU).

(6) Each joint will be measured, reported, and accepted under methods, testing times, and procedures consistent with the program employed for mainline density, i.e., PWL.

(7) For single nuclear density test results greater than 3.0% below specified minimums, the department will perform the following per standard spec 460.3.3.1 as modified here within:

a) Testing at 50-foot increments both ahead and behind the unacceptable site

b) Continued 50-foot incremental testing until test values indicate higher than or equal to -3.0 percent from target joint density.

c) Materials within the incremental testing indicating lower than -3.0 percent from target joint density are defined as unacceptable, and will be handled with remedial action as defined in the payment section of this document.

d) The remaining sublot average (exclusive of unacceptable material) will be determined by the first forward and backward 50 foot incremental tests that reach the criteria of higher than or equal to -3.0 percent from target joint density.

Note: If the 50-foot testing extends into a previously accepted sublot, remedial action is required up to and inclusive of such material; however, the results of remedial action must not be used to recalculate the previously accepted sublot density. When this occurs, the lane feet of any unacceptable material will be deducted from the sublot in which it is located, and the previously accepted sublot density will be used to calculate pay for the remainder of the sublot.

(8) Joint density measurements will be kept separate from all other density measurements, and entered as an individual data set into Atwood Systems.

(9) Placement and removal of excess material outside of the final joint edge, to increase joint density at the longitudinal joint nuclear testing location, will be done at the contractor's discretion and cost. This excess material and related labor will be considered waste and will not be paid for by the department. Joints with excess material placed outside of the final joint edge to increase joint density or where a notched wedge is used will be considered unconfined joints. Inlay paving operations (e.g. where one lane is milled and paved prior to the adjacent lane being milled and paved) will limit payment for additional material to 2 inches wider than the final paving lane width at the centerline and will be considered confined joints.

(10) If echelon paving is performed at the contractor's description to increase longitudinal joint density, additional cost related to echelon paving will not be paid for by the department. The joint between echelon paving lanes will be placed at the centerline and both sides of the joint will be considered confined joints.

D Measurement

(1) The department will measure each side of applicable longitudinal joints, as defined in Section A of this special provision, by the linear foot of pavement acceptably placed. Measurement will be conducted independently for the inside or median side and for the outside or shoulder side of paving lanes with two applicable longitudinal joints. Each paving layer will be measured independently.

E Payment

Add the following as standard spec 460.5.2.4 Pay Adjustment for HMA Pavement Longitudinal Joint Density:

(1) The department will administer longitudinal joint density adjustments under the Incentive Density HMA Pavement Longitudinal Joints and Disincentive Density HMA Pavement Longitudinal Joints items. The department will adjust pay based on density relative to the specified targets in Section B of this special provision, and linear foot of the HMA Pavement bid item for that sublot as follows:

PAY ADJUSTMENT FOR HMA PAVEMENT LONGITUDINAL JOINT DENSITY

PERCENT SUBLOT DENSITY ABOVE/BELOW SPECIFIED MINIMUM	PAY ADJUSTMENT PER LINEAR FOOT
Equal to or greater than +1.0 confined, +2.0 unconfined	$0.40
From 0.0 to +0.9 confined, 0.0 to +1.9 unconfined	$0
From -0.1 to -1.0	$(0.20)
From -1.1 to -2.0	$(0.40)
From -2.1 to -3.0	$(0.80)

More than -3.0	*REMEDIAL ACTION*[1]

[1] Remedial action must be approved by the engineer and agreed upon at the time of the pre-pave meeting and may include partial sublots as determined and defined in 460.3.3.2(7) of this document. If unacceptable material is removed and replaced per guidance by the engineer, the removal and replacement will be for the full lane width of the side of which the joint was constructed with unacceptable material.

(2) The department will not assess joint density disincentives for pavement placed in cold weather because of a department-caused delay as specified in standard spec 450.5.2(3).

(3) The department will not pay incentive on the longitudinal joint density if the traffic lane is in disincentive A disincentive may be applied for each mainline lane and all joint densities if both qualify for a pay reduction.

The department will pay incentive for longitudinal joint density under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
460.2007	Incentive Density HMA Pavement Longitudinal Joints	DOL

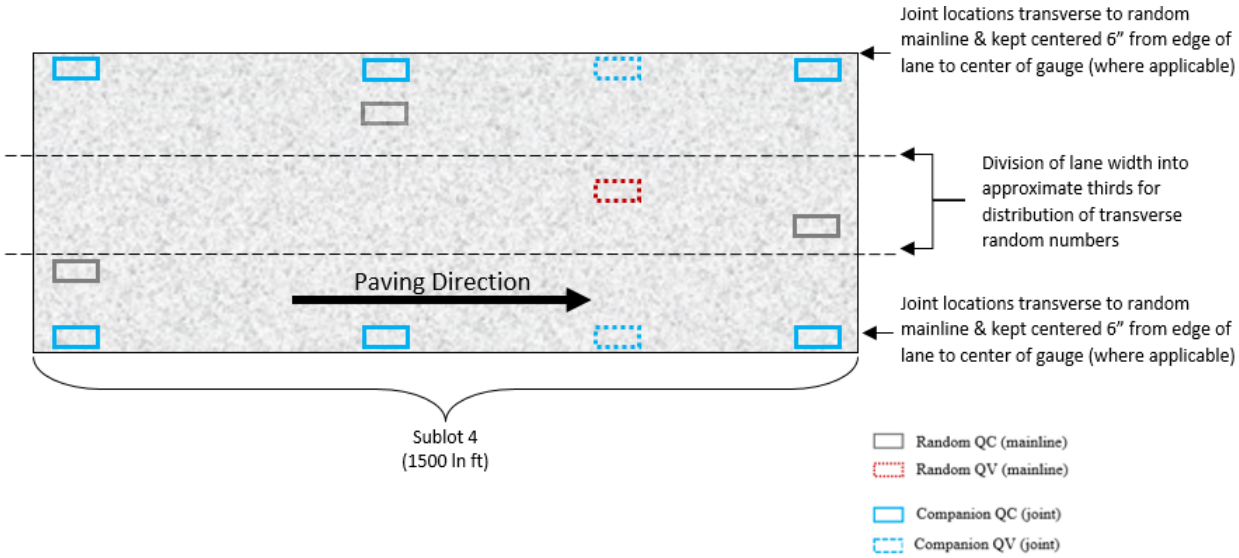
The department will administer disincentives under the Disincentive Density HMA Pavement Longitudinal Joints administrative item.

Appendix

WisDOT Longitudinal Joint – Nuclear Gauge Density Layout

Each QC and QV density location must have a companion density location at any applicable joint. This companion location must share longitudinal stationing with each QC or QV density location and be located transversely with the center of the gauge 6-inches from the edge of the paving area.

For HMA Pavement Percent Within Limits QMP projects, this appears as follows:



Further Explanation of *PAY ADJUSTMENT FOR HMA PAVEMENT LONGITUDINAL JOINT DENSITY* Table

	Confined				
	Lower Layer (On Base)		Upper Layer		
	LT/MT	HT	LT/MT	HT	Pay Adjust
Mainline Target (SS 460-3)	91.0	92.0	93.0	93.0	-

Confined Target (mainline - 1.5)	89.5	90.5	91.5	91.5	-
Equal to or greater than +1.0	≥ 90.5	≥ 91.5	≥ 92.5	≥ 92.5	$0.40
From 0.0 to +0.9	90.4 - 89.5	91.4 - 90.5	92.4 - 91.5	92.4 - 91.5	$0
From -0.1 to -1.0	89.4 - 88.5	90.4 - 89.5	91.4 - 90.5	91.4 - 90.5	($0.20)
From -1.1 to -2.0	88.4 - 87.5	89.4 - 88.5	90.4 - 89.5	90.4 - 89.5	($0.40)
From -2.1 to -3.0	87.4 - 86.5	88.4 - 87.5	89.4 - 88.5	89.4 - 88.5	($0.80)
More than -3.0	< 86.5	< 87.5	< 88.5	< 88.5	REMEDIAL ACTION

	Unconfined				
	Lower Layer (On Base)		**Upper Layer**		
	LT/MT	**HT**	**LT/MT**	**HT**	**Pay Adjust**
Mainline Target (SS 460-3)	91.0	92.0	93.0	93.0	-
Unconfined Target (Mainline -3.0)	88.0	89.0	90.0	90.0	-
Equal to or greater than +2.0	≥ 90.0	≥ 91.0	≥ 92.0	≥ 92.0	$0.40
From 0.0 to +1.9	89.9 - 88.0	90.9 - 89.0	91.9 - 90.0	91.9 - 90.0	$0
From -0.1 to -1.0	87.9 - 87.0	88.9 - 88.0	89.9 - 89.0	89.9 - 89.0	($0.20)
From -1.1 to -2.0	86.9 - 86.0	87.9 - 87.0	88.9 - 88.0	88.9 - 88.0	($0.40)
From -2.1 to -3.0	85.9 - 85.0	86.9 - 86.0	87.9 - 87.0	87.9 - 87.0	($0.80)
More than -3.0	< 85.0	< 86.0	< 87.0	< 87.0	REMEDIAL ACTION

stp-460-075 (20200629)

Remove items not included in the contract from the heading and Section E Payment. Routing and sealing is primarily used for asphalt pavements. Cleaning and sealing is primarily used for both asphalt pavement and concrete pavements. Pavement marking will need to be installed to replace existing markings that become covered or obliterated by this process.

Provide an INFORMATION ONLY table showing the expected Linear Feet of cracks of each mile that will need to be routed & sealed and cleaned & sealed. This will help the contractors bid the project and hopefully help with better construction estimates/bids.

89. stp-492-010 Routing and Sealing Cracks and Joints with Hot-Applied Sealant, Item 492.2015.S; Cleaning and Sealing Cracks and Joints with Hot-Applied Sealant, Item 492.2020.S.

A Description

This special provision describes sealing primary cracks and joints along the entire length of asphalt or concrete pavements by means of routing or cleaning.

The item Routing and Sealing Cracks and Joints with Hot-Applied Sealant consists of routing primary cracks and joints, cleaning prior to sealant application, and applying the sealant as the plans show or as directed by the engineer.

The item Cleaning and Sealing Cracks and Joints with Hot-Applied Sealant consists of cleaning primary cracks and joints prior to sealant application and applying the sealant as the plans show or as directed by the engineer.

Primary cracks are defined as transverse, longitudinal, and centerline cracks greater than or equal to 1/4 inches wide but less than or equal to 1½ inch wide

B Materials

B.1 Sealant Material

Use a sealant material meeting the requirements of ASTM D6690 Type II or Type IV: Joint and Crack Sealants, Hot Applied, for Asphalt and Concrete Pavements. Deliver the sealant in the manufacturer's original sealed container legibly marked with the following information:

- Manufacturer's name
- Trade name of sealant
- Manufacturer's batch or lot number
- ASTM D6690, Type II or Type IV
- Minimum application temperature
- Maximum (or safe) heating temperature

Provide the engineer with a certificate of compliance along with a copy of the manufacturer's recommendations on heating, re-heating and application of the sealant prior to start of work.

Mixing of different manufacturer's brands or different types of sealants is prohibited.

B.2 Equipment

Furnish all equipment necessary to complete the routing, cleaning, preparing and sealing of cracks in accordance with the requirements specified. Equipment required for this operation includes the following:

- Mechanical router capable of routing the asphaltic pavement to provide a depth to width ratio of all routed cracks of 1:1 (i.e. 3/4 inch depth x 3/4 inch width).
- Air Compressor shall be portable and have a minimum rated capacity of 100 CF of air per minute at 90-psi pressure at the nozzle and have sufficient hose to maintain a continuing operation without interruption. The unit shall also be equipped with traps that will maintain the compressed air free of oil and water.
- High Pressure Air Lance or Hot Air Lance shall be designed specifically for use in cleaning highway pavement and to remove debris, dirt, and dust from the cracks.
- Hand tools shall consist of brooms, shovels, metal bars with chisel shaped ends, and any other tools that may be satisfactorily used to accomplish this work.
- Squeegees shall be of a flexible rubber type, in the shape of a "vee" (V), and capable of contacting materials up to 450º F without damage to it or materials.

- Pouring Pots shall be equipped with mobile carriage and have a flow control valve that allows all cracks to be filled to refusal to eliminate all voids or entrapped air and not leave unnecessary surplus crack sealer on pavement surfaces.
- Melting Kettle shall be constructed as a double lined boiler with space between the inner and outer shells filled with oil or other material for heat transfer. The material for transferring heat shall have a flash point of not less than 600º F. Positive temperature control and mechanical agitation will be provided. Direct heating shall not be used. When using, maintain the temperature of the sealing compound within the range specified by the manufacturer. The kettle shall be equipped with thermostatic controls calibrated between 200º F and 550º F.

C Construction

C.1 General

Before commencing work, complete all pavement repairs that are included in the contract and are adjacent to pavement cracks.

Place sealant materials when air and surface temperature at the crack sealing area are 40° F or greater in the shade. Do not place sealant material if temperatures are predicted to drop below 40° F before the sealant is cured.

Do not place sealant material if weather conditions are raining or wet. If sealant is placed and rain falls before the sealant has properly cured, remove and replace the wet/contaminated sealant.

Do not place sealant material when anti-icing or de-icing chemicals agents are present on the pavement. Presence of these materials will negatively affect the ability of the sealant to adhere to the pavement.

Remove failed sealant, dirt, dust and any deleterious material. Dispose of any debris or material removed in the preparation of cracks and any over-heated material in a legal and environmentally safe method.

Prepare cracks for sealing on the same day that are to be sealed. Do not allow traffic to run on cleaned cracks or joints prior to application of sealant material.

At location were crack sealant settles into the crack opening more than ¼ inch below the pavement, apply additional material to meet the requirements.

A low pressure, light spray of water may be used to accelerate cooling of the sealant. Protect the public from potentially objectionable and/or hazardous airborne debris.

Apply an approved de-tacking agent or single ply-toilet paper for use with the specified sealant to the surface of the newly placed sealant if traffic results in tracking of the crack sealing material. Repair any damage by traffic to treated pavement areas.

Place same day pavement markings for centerline that becomes covered or obliterated with the sealant if the road is open to all traffic. Re-mark lane lines and edge lines within a timely manner.

C.2 Rout and Seals

Primary cracks shall be routed, cleaned and sealed. Routing is required for all primary cracks less than ¾ Inch wide. Hairline cracks will not be sealed.

Route cracks to be sealed to a minimum width of 3/4 inch and a minimum depth of 3/4 inch.

Clean the routed reservoirs/cracks with a minimum of one pass of the high-pressure air equipment. Cleaning continues until the reservoir/crack is dry and all dirt, dust or deleterious material is removed.

The use of a heat lance to clean and dry route cracks is optional. If a heat lance is used, condition the pavement prior to placement of the crack sealant. Immediately prior to the placement of the crack sealant, heat the surface of both sidewalls of the reservoir/crack, as well as the pavement 1 inch on either side of the sidewalls with hot compressed air from a heat lance. Do not scorch the routed reservoir, crack or adjacent pavement surface.

C.3 Clean and Seal

Clean and seal, without routing, longitudinal and transverse cracks that are equal or greater than ¾ inch wide but equal or less than 1 ½ inch wide.

Previously sealed cracks that exhibit signs of failure, allowing water to penetrate the crack, such as missing or loss of existing sealant material, cracking of the existing sealant, loss of adhesion to existing pavement and overband wear shall be cleaned of foreign and loose material and filled without routing.

Use a high-pressure air lance or hot air lance to thoroughly clean cracks to minimum depth of ½ inch of dust, dirt, foreign material, sand, and any other extraneous materials immediately before sealing. Do not burn, scotch, or ignite the adjoining pavement when using a hot air lance.

Install suitable traps or devices on the compressed air equipment to prevent moisture and oil from contaminating the crack surfaces. Maintain these devices and ensure that they are functioning properly.

Seal the crack by placing the applicator wand in or directly over the crack opening and carefully discharge the sealant. Strike-off the sealant flush with the pavement surface using a squeegee or using a sealing shoe pressed firmly against the pavement. Only a narrow thin film of material measuring from 1inches to 3 inches wide is allowed on the pavement surface after sealing the crack.

Cracks intersecting milled rumble strips along the centerline or paved shoulder shall be cleaned of foreign and loose materials and may be filled without routing at the department's discretion and decide to quote. Minimize puddling of sealant in the depressions of the rumble strips.

D Measurement

The department will measure Routing and Sealing Cracks and Joints with Hot-Applied Sealant by the mile, measured in length by the centerline mile, acceptably completed.

The department will measure Cleaning and Sealing Cracks and Joints with Hot-Applied Sealant by the mile, measured in length by the centerline mile, 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
492.2015.S	Routing and Sealing Cracks and Joints with Hot-Applied Sealant	MI
492.2020.S	Cleaning Routing and Sealing Cracks and Joints with Hot-Applied Sealant	MI

Payment for Routing and Sealing Cracks and Joints with Hot-Applied Sealant is full compensation for routing, cleaning, disposal, furnishing and application of sealant and re-sealing as needed.

Payment for Cleaning and Sealing Cracks and Joints with Hot-Applied Sealant is full compensation for cleaning, disposal, furnishing and application of sealant and re-sealing as needed.

The department will pay separately for Pavement Markings.

stp-492-010 (20200629)

90. stp-495-010 Cold Patch, Item 495.1000.S.

A Description

This special provision describes furnishing cold patch and filling potholes and other voids in existing pavement surfaces as the engineer directs.

B Materials

Furnish a mixture of course aggregate, natural sand, and MC-250 bituminous material designed to have a workability range of 15-100º F without heating. Ensure that the mixture:

- Adheres to wet surfaces.
- Resists damage from water, salt, and deicing products.
- Requires no mixing or special handling before use.
- Supports traffic immediately after placement and compaction.

Conform to the following gradation:

SIEVE SIZE	PERCENT PASSING (by weight)
1/2-inch (12.5 mm)	100
3/8-inch (9.5 mm)	90 - 100
No. 4 (4.75 mm)	90 max
No. 8 (2.38 mm)	20 - 65
No. 200 (0.074 mm)	2 - 10
Bitumen	4.8 - 5.4

The department will accept cold patch based primarily on the engineer's visual inspection. The department may also test for gradation.

C Construction

Stockpile cold patch on site on a smooth, firm, well-drained area cleared of vegetation and foreign material. Cover the stockpile and ensure that it is easily accessible. Replenish the stockpile throughout the project duration but limit the size at any given time to 10 tons on site unless the engineer approves otherwise. Dispose of unused material at project completion unless the engineer directs otherwise.

Place cold patch by hand. Remove ponded water and loose debris before placement. Compact flush with a tamper, roller, or vehicle tire after placement.

Refill patched areas as necessary to maintain a flush pavement surface until project completion.

D Measurement

The department will measure Cold Patch by the ton, acceptably stockpiled on site.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
495.1000.S	Cold Patch	TON

Payment for Cold Patch is full compensation for providing and maintaining patches; for furnishing and replenishing stockpiled material on-site; and for disposing of excess material at project completion.

stp-495-010 (20160607)

501-010 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this special provision to add a bid item for ice to contracts that the designer expects will have concrete masonry for structures placed from June 15 through August 15 and that meet one or both of the following:

- ***Any quantity of high performance concrete (HPC) incorporated in structures.***

  High Performance Concrete (HPC) Masonry Structures

- ***A combined total quantity of more than 2000 CY under the following bid items:***

  Concrete Masonry Bridges Concrete Masonry Retaining Walls

  Concrete Masonry Bridges HES Concrete Masonry Retaining Walls HES

  Concrete Masonry Culverts Concrete Masonry Endwalls

  Concrete Masonry Culverts HES Concrete Masonry Overlay Decks

Calculate the estimated quantity as follows:

Ice (lbs)=(15%) X (CY Concrete)X (50 lbs/CY)

91. stp-501-010 Ice Hot Weather Concreting, Item 501.1000.S.

Conform to standard spec 501.3.8.2 except the department will pay for ice at the contract unit price under the Ice Hot Weather Concreting bid item. This special provision only applies to work done under the following contract bid items:

Concrete Masonry Bridges	Concrete Masonry Retaining Walls
Concrete Masonry Bridges HES	Concrete Masonry Retaining Walls HES
Concrete Masonry Culverts	Concrete Masonry Endwalls
Concrete Masonry Culverts HES	Concrete Masonry Overlay Decks
High Performance Concrete (HPC) Masonry Structures	

Replace standard spec 501.4 and 501.5 with the following:

501.4 Measurement

(1) The department will measure Ice Hot Weather Concreting by the pound acceptably completed, measured only if the conditions prescribed in standard spec 501.3.8.2 are met.

501.5 Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
501.1000.S	Ice Hot Weather Concreting	LB

(2) Payment for Ice Hot Weather Concreting is full compensation for ice used to cool concrete placed in hot weather as specified in standard spec 501.3.8.2.

(3) The department will not pay directly for the concrete specified under this section. Concrete is incidental to the various bid items using it. Payment under those bid items includes providing all materials, including aggregates and associated aggregate source testing, cement, fly ash, slag, and admixtures; for preparing, transporting, storing, protecting and curing concrete; and for contractor requirements related to testing specified in standard spec 501.3.10.

(4) If required to remove and replace any concrete damaged by lack of proper protection. Perform this work at no expense to the department.

stp-501-010 (20151210)

502-010 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Allows concrete to be deposited under water. Title may be changed to Abutment Construction.

92. stp-502-010 Pier Construction.

Determine the method of construction, and observe the following conditions:

1. If a cofferdam is used, build the cofferdam of non-erodable material.
2. Concrete poured under water will be allowed; pour the concrete conforming to standard spec 502.3.5.3. Ensure that the forms are tight to prevent leakage of concrete into the stream. Treat all displaced water by filtration, settling basin, or other means sufficient to reduce the cement content before discharging the water into the stream.
3. Excavated material from the stream may be utilized in the fill slopes so long as it is covered with other suitable material to prevent it from eroding back into the stream.

stp-502-010 (20050502)

93. stp-502-015 Crack Sealing Epoxy, Item 502.0717.S.

A Description

This special provision describes sealing transverse and longitudinal cracks in bridge decks.

B Materials

Provide a penetrating sealant that is listed on the department's approved product listing, "Low Viscosity Crack Sealers".

C Construction

Clean the cracks to be sealed by the use of high pressure air after Cleaning Deck and Preparation Deck are completed.

Pour the epoxy sealant into the cracks to be sealed after the deck preparation has been completed and before the overlay is placed. Place the sealant in as narrow a band as possible so that the bond of the new concrete overlay to the existing concrete is not impaired.

At no expense to the department, clean all spills and clean all areas of too wide a band of sealant before the overlay is placed.

D Measurement

The department will measure Crack Sealing Epoxy in length by the linear foot of cracks, sealed 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
502.0717.S	Crack Sealing Epoxy	LF

Payment is full compensation for furnishing and placing the epoxy sealant, including any required cleaning.

stp-502-015 (20090901)

94. stp-502-020 Expansion Device, Item 502.3101.

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
	35%	D395 Method B Modified
Strain with 100 pphm ozone	No Cracks	ASTM D1149 Method A
Mass Change, max.	45%	ASTM D471

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

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

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

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

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

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

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

stp-502-020 (20200629)

95. stp-502-021 Expansion Device Modular, Item 502.3111.S.

A Description

This special provision describes furnishing and installing shop-fabricated waterproof modular expansion devices as the plans show conforming to standard spec 502 as modified in this special provision. Ensure that modular expansion joint devices seal the deck surface, curbs, gutters, and parapet walls as the plans indicate. Leaking or seeping of water through the joint will be cause for rejection of modular expansion devices.

B Materials

B.1 General

Furnish parts and elements that have material properties meeting the physical and chemical requirements shown in their manufacturer's technical data or as noted below, except as modified by the standard spec, this special provision, or the plans. Furnish certified test results from the manufacturer attesting to physical and chemical properties. Do not use any aluminum components or hardware.

B.2 Modular Expansion Device System Components

Furnish components for the Modular Expansion Device System from one of the following manufacturers and model series:

D.S. Brown Company, Steelflex Modular D-Series
(419) 257-3561

R.J. Watson, Inc., Modular RJW-Series
(716) 741-2166

Watson, Bowman, & Acme Inc., Wabo-Maurer STM-Series
(716) 691-7566

B.3 Steel Plates, Bars, Shapes, and Sheets

Furnish steel plates, bars, shapes, and extrusions that have been fabricated from high strength, low alloy grade 50 or grade 50W steel conforming to ASTM A709, or as shown on the approved shop drawings. Anchor bars and support bar boxes may be fabricated from ASTM A709 grade 36 steel. Furnish anchor bolts, bolts, nuts, and washers that conform to the requirements of ASTM F3125. Secondary shapes or joint components may be assembled with bolts, nuts, and washer conforming to ASTM A490.

Furnish stainless steel sheets for the sliding surfaces of support bars that conform to the requirements of ASTM A167, alloy 304, 20 micro-inch RMS finish.

B.4 Elastomeric Seal Elements

Furnish preformed elastomeric seal elements that are polychloroprene (neoprene) of a rectangular or strip cross section having a minimum thickness of 1/4 inch and conform to ASTM D3542 modified to omit the recovery test. The elastomeric seal elements shall meet the following physical properties:

Property	Requirement	Test Method
Tensile Strength, min	2000 psi	ASTM D412
Elongation @ Break, min	250%	ASTM D412
Hardness, Type A, Durometer	60± 5 pts	ASTM D2240
Compression Set, 70 Hrs @ 212º F, max	35%	D395 Method, B Modified
Ozone Resistance, after 70 hours at 100º F under 20% Strain with 100 pphm ozone	No Cracks	ASTM D1149 & D518, Method A
Mass Change in Oil 3 after 70 hours @ 212º F, Mass Change, max	45%	ASTM D471

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 seal element shall be one piece, and full length of the expansion joint including curb and parapet face projections. The lubricated adhesive for installing the preformed elastomeric elements in place shall be

one-part moisture curing polyurethane and hydrocarbon solvent mixture as recommended by the manufacturer.

B.5 Support Bars

Place support bars parallel to the roadway at a maximum support assembly spacing of 4’-0". Furnish support bars that are not less than 1 1/2 inches in width and at least 4 inches in height; each transverse center beam shall have an individual support bar.

Support bars shall incorporate stainless steel sliding surfaces to minimize resistances to joint movements. Stainless steel shall be welded to support bars. Support the support bars above, below, and laterally as required to prevent uplifting, transmit bearing loads, and to maintain positioning of the bar.

Fabricate support bar bearings from polyurethane compound with PTFE self-lubricating surfaces having engineering properties equivalent to adiprene, Teflon, or cast nylon with MDS. Positively lock the support bar bearings and springs or spacers into the support box by a dowel or pin. The connection must permit subsequent removal and replacement of the bearings and springs. The support bar springs shall be constructed similarly to the bearings but shall provide the required precompressive force to maintain the support bar in place while under traffic loads. Use a suitable equilibrium device that works counter to the compression forces of the sealing elements to maintain equalized expansion properties for each element across the modular joint assembly. Furnish anchor plates for the support bar springs or neoprene blocks that have a minimum thickness of 3/4 inch.

B.6 Transverse Center Beams

Transverse center beams shall be at least of 4 1/2 inches in height and have a minimum vertical web thickness of 3/4 inch. Design transverse center beams for an AASHTO HS25 live loading plus 30 percent impact. Make shop splices in the transverse center beam with a full penetration weld. The exterior transverse beams shall have a minimum vertical web thickness of 3/4 inch.

The connections between the transverse center beams and support bars shall be a full penetration weld according to the plan details. Full penetration welds to be tested by ultrasound using the compressive criteria.

B.7 Support Bar Boxes

Furnish support bar boxes that consist of steel plates not less than 1/2 inch in thickness fabricated with continuous welds at all joints. The inside dimensions of the box shall be consistent with all boxes and within +0.040 inches of prescribed height as measured where the bearings and spring compress about the support bar. Fabricate support box plates with a continuous weld. Make anchorage details as the plans show.

B.8 Structural Steel Surfaces

Galvanize after fabrication, according to ASTM A123, all structural steel surfaces of the expansion joint devices and anchorages, except ASTM A-490 bolts, components of stainless steel, and parts coated with polyurethane, adipene, nylon, or Teflon.

Galvanize or metallize conforming to standard spec 635 all bolts, nuts, washers, and steel components that are not galvanized using the above procedure, including all ASTM A-490 bolts.

If a retainer clip is used for locking the neoprene strip type seal, continuously weld it on its top side. Due to the galvanizing coating requirement, also make a continuous weld underneath the clip.

All welding shall be according to AWS D1.5 or D1.6 of the welding code and shall be done by certified welders only. A shop certified under AISC category for simple structures shall perform fabrication.

The fabricator will be permitted to shop weld pre-galvanized transverse roadway sections, complete with anchorages, of the expansion device steel extrusions. The pre-galvanized roadway sections shall be not less than 10 feet long. The pre-galvanized roadway side sections shall have additional anchorages, if required, so as to provide an anchorage within 9 inches of each end of the section. Abutting ends shall be beveled 1/4 inch on three sides and deburred. All galvanizing shall be completely removed from the areas to be welded. The pre-galvanized sections shall be groove welded on three sides with care taken to prevent weld material from entering the gland groove. The weld across the top of the extrusion shall be ground smooth and all areas of galvanizing damaged by the welding operations shall be repaired conforming to standard spec 635. Make field splices in transverse center roadway sections with a partial penetration weld.

C Construction

The manufacturer of the prefabricated expansion joint assembly shall prepare shop drawings showing details of the assembly and installation. Submit shop drawings to the engineer conforming to standard spec 105.2 with electronic submittal to the fabrication library under standard spec 105.2.2. Department review does not relieve the contractor from responsibility for errors or omissions on shop drawings.

Support the modular joint assembly at 8'-0 minimum spacing along both sides of the joint. Construct the modular expansion device system according to the details shown on the shop drawings. Tolerance requirements shall be according to AASHTO specifications.

Install according to the plan details, the manufacturer's and supplier's approved shop drawings, and as the engineer directs. In addition, the manufacturer shall submit current product literature with the shop drawings and the shop drawings shall reflect that literature.

Remove all modular expansion joint forming material from the joint opening. Pre-set the modular joint assembly according to the approved shop drawings, joint temperature setting data, and specifications. The maximum joint opening for a single modular unit shall be 3 inches.

The joint assembly manufacturer shall furnish technical assistance to the contractor and engineer through the personal services of a technical representative, who is a fulltime employee of the manufacturer during installation of the joint sealing systems. This representative shall be accessible to the engineer and shall be at the site during the work that involves the setting of all parts of each modular expansion joint assembly. The contractor shall be responsible for informing the representative before the date of installation.

D Measurement

The department will measure Expansion Device Modular (Structure) by the linear foot, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
502.3111.S	Expansion Device Modular	LF

Payment is full compensation for furnishing and placing the device complete in place; furnishing and completely installing all elements and parts of the joints, anchors, armor or structural metal; galvanizing materials; furnishing and installing all hardware, pads, bonding material, and reinforcing bars within the blockout not otherwise covered for payment, and barrier railing plates.

stp-502-021 (20200629)

96. stp-502-025 Ruptured Void Repair, Item 502.4200.S.

A Description

This special provision describes repairing the voids in the concrete voided slab spans as the plans show conforming to standard spec 203, standard spec 502, and standard spec 509 as modified in this special provision.

B (Vacant)

C Construction

In the event that the floor area over the voids is broken into during preparation for the overlay, remove the floor over the voids to be replaced as the plans show using approved equipment that will not cause damage to that portion of the concrete floor, reinforcing steel and voided areas that are to remain in place. Preserve and utilize the existing reinforcing steel, and thoroughly clean, realign and retie it as considered necessary in the judgment of the engineer.

All old concrete and debris that is removed shall become the property of the contractor and shall be disposed of by the contractor away from the site.

Thoroughly clean by brooming and using water pressure the surfaces to which the new concrete is to adhere, remove all loose particles and dust, and keep the surfaces continuously wet for two hours before placing concrete.

D Measurement

The department will measure Ruptured Void Repair in horizontal surface area by the square yard of completed and accepted work.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
502.4200.S	Ruptured Void Repair	SY

Payment is full compensation for removing concrete; disposing of waste material; forming; and for salvaging and using the existing reinforcement.

Concrete Masonry used in this item will be measured and paid for in the bid item Concrete Masonry Overlay.

stp-502-025 (20030820)

97. stp-502-030 Concrete Masonry Soldier Pile Footings, Item 502.0110.S.

A Description

This special provision describes furnishing and placing concrete into predrilled holes for soldier piles and installing soldier piles. Perform work conforming to standard spec 502.

B Materials

Provide and use concrete masonry for Concrete Masonry Soldier Pile Footings conforming to grade A or grade A-FA as specified in standard spec 501. Perform QMP testing conforming to standard spec 716 for Class II Ancillary Concrete for all concrete masonry for Concrete Masonry Soldier Pile Footings.

C Construction

Before placing concrete masonry, give the engineer sufficient notice to allow inspection of the predrilled holes, soldier piles, and casting preparations. For concrete masonry solider pile footings constructed without the use of slurry, no more than 3 inches of standing water is permitted in the bottom of the drilled hole before beginning solider pile installation and immediately before placing concrete masonry in the hole around the solider pile. If necessary, place up to 2 feet of concrete at the bottom of the hole to assist in aligning the soldier pile. Block or clamp the soldier pile in place at the ground surface before placing concrete.

For holes drilled or excavated without slurry, the department will allow the contractor to place concrete by free-falling the concrete from the ground surface down the shaft around the soldier pile. If temporary casing is used, begin placement of the concrete before removing the casing. Remove the casing while the concrete remains workable. For holes drilled or excavated using slurry, place concrete using a tremie method from the bottom of the shaft. Withdraw the tremie pipe slowly as the level of concrete rises in the shaft and never let the level of the tremie pipe outlet exceed the height of the slurry.

D Measurement

The department will measure Concrete Masonry Soldier Pile Footings by the cubic yard, acceptably completed. The department will only include material within the limits and in the places the plans show.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
502.0110.S	Concrete Masonry Soldier Pile Footings	CY

Payment for Concrete Masonry Soldier Pile Footings is full compensation for furnishing all materials, pumping, placing, QMP testing, finishing, curing, and protecting installation of soldier piles.

stp-502-030 (20161130)

98. stp-502-035 Non-Shrink Grout, Item 502.0120.S.

A Description

This special provision describes furnishing and placing Non-Shrink Grout.

B Material

Furnish non-shrink grout which is quick-setting, with rapid strength gain, and high-bond strength. Grout shall not contain calcium chloride or admixture containing calcium chloride or other ingredient in sufficient quantity to cause corrosion to steel reinforcement. Mix grout just before use according to the manufacturer's instructions. Follow manufacturer's recommendation for dosage of corrosion inhibitor admixture.

Use structural non-shrink grout that meets a minimum compressive strength of 4,000 psi within 24 hours when tested as specified in AASHTO T 106. Meet all the requirements of AASHTO T 160 with the exception that the contractor-supplied cube molds will remain intact with a top firmly attached throughout the curing period. Use structural non-shrink grout with no expansion after seven days. Refer to Table 1 for structural non-shrink grout requirements.

Table 1 Structural Non-Shrink Grout

Properties[1]	Requirements	ASTM	AASHTO
Accelerated Weathering	As Specified in ASTM or AASHTO	C 666	T 260
Compressive Strength	>5,000 psi @ 28 days		T 106
Accepted Bond Strengths	>1,000 psi @ 24 Hours	C 882	
Test Medium	<3% White Utah Road Salt		T 161
Accepted Weight Loss	<15% @ 300 Cycles		T 161
Length Change	No expansion after 7 days		T 160

[1] Certified test results from a private AASHTO accredited testing laboratory will suffice for acceptance.

C Construction

Place Non-Shrink Grout conforming to standard spec 501 and standard spec 502 and as the plans show.

D Measurement

The department will measure Non-Shrink Grout by the cubic 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
502.0120.S	Non-Shrink Grout	CF

Payment for Non-Shrink Grout is full compensation for providing all materials; placing, finishing, protecting and curing the Non-Shrink Grout.

stp-502-035 (20161130)

99. stp-502-055 Protective Surface Treatment Reseal, Item 502.3215.S.

A Description

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

B Materials

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

C Construction

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

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

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

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

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

D Measurement

The department will measure Protective Surface Treatment Reseal by the square yard, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
502.3215.S	Protective Surface Treatment Reseal	SY

Payment is full compensation for resealing, including surface preparation and cleaning.

stp-502-055 (20080902)

Use to ensure the quality of concrete pier or abutment components placed under water: concrete seal (under a spread footing), concrete spread footing, or shaft of pile encased pier.

100. stp-502-090 Underwater Substructure Inspection Enter Structure #, Item 502.9000.S.

A Description

This special provision describes providing underwater inspections of the substructure seal(s), footing(s) or shaft(s).

B (Vacant)

C Construction

After placement of Concrete Masonry Bridges or Concrete Masonry Seal for the substructure and as soon as practicable after removal of the forms, provide a diver who, under the direction of the engineer, will report the characteristics and quality of the concrete placed below water level to ensure that the concrete masonry has been properly formed and placed.

Provide a video monitor and video camera, along with two-way audio communications with the diver during the inspection and record the video and audio.

Correct all deficiencies in the concrete and repeat the inspections until all deficiencies are corrected.

D Measurement

The department will measure Underwater Substructure Inspection Enter Structure # once for each individual unit, acceptably completed. The entire pier or abutment substructure location is considered a unit. Multiple underwater inspections at the same substructure location to correct concrete deficiencies will not be measured.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
502.9000.S	Underwater Substructure Inspection Enter Structure #	EACH

Payment is full compensation for all diving inspections and reporting; and for supplying video and two-way audio communications equipment and recorded electronic video and audio files. Payment for correcting deficiencies in the placed concrete will be included at no extra cost to the project.

stp-502-090 (20190618)

101. stp-503-040 Precast Prestressed Concrete Deck Panels Enter Structure #, Item 503.0400.S.

A Description

This special provision describes manufacturing, transporting, and erecting precast prestressed concrete deck panels.

B Materials

B.1 Concrete

Use concrete in the precast panels that meets the following requirements: Grade D concrete; minimum compressive strength of 5000 psi at 28 days; and minimum release strength of 4000 psi.

B.2 Reinforcing

Position and space the pretensioned reinforcement used in the deck panels as given on the plan. Use pretensioned reinforcement that conforms to the requirements of standard spec 503.2.3.

Use welded wire fabric that meets the requirements of ASTM A497.

All external or exposed steel shall be epoxy-coated.

B.3 Polystyrene and Fiberboard

Use rigid cellular polystyrene or fiberboard to form the haunches at the girder top flanges. Use rigid cellular polystyrene that meets the requirements of ASTM C578, Classification Type IV (4) and has a minimum density of 1.6 pcf, and minimum compressive strength of 25 psi; or use asphalt-impregnated fiberboard that meets the requirements of AASHTO M213, or asphalt-impregnated fiberboard sheathing that meets the requirements of ASTM C208.

B.4 Grout

If grout is used to support the deck panels, use an approved non-shrink, non-chloride grout mixed and placed according to the grout manufacturer's instructions and specifications.

B.5 Plant Certification

Furnish precast prestressed concrete deck panels that have been manufactured in a plant meeting the requirements of standard spec 503.2.4.

C Construction

C.1 Surface Finish

Score the top surfaces of deck panels with a tining rake or similar tool, parallel to the panel's prestressing strands. Score the top surfaces at 3/4 inch to 1 inch spacing, and to a depth of 1/8 inch to 3/16 inch. Remove areas of mortar buildup in excess of 3/8 inches above the top surface of the panel.

C.2 Tolerances

The maximum allowable dimensional tolerances for the deck panels shall be as follows:

Thickness	+ 3/16 inch or - 0 inch
Length	+/- 1/4 inch
Width	+/- 1/4 inch
Squareness (difference in diagonal lengths)	max 1/2 inch
Location of Strands (measured from bottom of plank to centerline strand)	(panel thickness/2) +/- 1/8 inch
Bowing	+/- 1/8 inch
Sweep	+/- 1/8 inch
Warping	1/16 inch per foot of distance from nearest adjacent corner

C.3 Handling and Storing

Handle the precast prestressed concrete deck panels, from the time of releasing the strands until they are in place in the structure. Conform to standard spec 503 as modified in this special provision.

The department will reject panels having cracks visibly apparent radiating from the strand at the end of the panel.

Maintain the panels in a flat position at all times and support the panels at approximately 15 inches from ends. Place the supports at right angles to the strands and ensure that the supports extend the full width of the panel.

During storage and transportation, position the supports such that the panels are maintained in a level position and are not twisted. When panels are stacked, position the supports of all panels in the same vertical planes and ensure that the supports are of adequate thickness to prevent damage to the lifting hooks.

C.4 Deck

Place the precast prestressed deck panels on rigid cellular polystyrene or fiberboard. Cut and place the polystyrene or fiberboard to form a haunch that produces a uniform total deck thickness. If grout is used to support the panels, place the grout before the cast-in-place deck. A flowable grout may be used after the panels have been set, or a low slump grout may be used and placed immediately before the panels are set. Place the grout a minimum of three days before placement of the cast-in-place deck and use wetted burlap to cure the exposed grout.

Before placement of concrete over the panels, clean the tops of the panels and ensure that they are free of all foreign material. Immediately before placing concrete over the panels, wet the top surface of the panels until free moisture appears and remains.

Place cast-in-place concrete and reinforcement bars conforming to standard spec 501 and standard spec 505. Take special care to properly vibrate the concrete at the panel ends over the girders to avoid honeycombs and voids.

D Measurement

The department will measure Precast Prestressed Concrete Deck Panels Enter Structure # in area by the square foot of panel, 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
503.0400.S	Precast Prestressed Concrete Deck Panels Enter Structure #	SF

Payment is full compensation for manufacturing, transporting, handling, and storing the panels; and for cleaning and erecting the panels.

stp-503-040 (20170615)

102. stp-503-100 Removing and Resetting Prestressed Girders Enter Structure #, Item 503.1005.S.

A Description

This special provision describes removing prestressed concrete girders from substructure units, storing the girders, and resetting them when the substructures are complete.

B (Vacant)

C Construction

Lift girders using the original lifting device, if still on the girders, or by using slings or other method that the engineer has previously approved. While handling the girders, keep girder webs in a vertical position. Store the girders on timbers or pads that are level so that the girders are vertical and so that they are not being twisted. Place pads within 24 inches of the girder ends.

In the event that damage does occur to any item that is designated for re-use in the new work, repair or replace the damaged item at no expense to the department.

Discard and replace girders that are damaged by improper handling or storing at no expense to the department.

Remove concrete in contact with existing girders using mechanical means. Air chippers or breakers used for chipping out the old concrete shall have a total weight not exceeding 35 pounds and shall be equipped with flat, chisel-type points. The engineer may direct that the weight of the hammer be reduced.

D Measurement

The department will measure Removing and Resetting Prestressed Girders Enter Structure #, completed according to the contract and accepted, as a single complete unit of work; this lump sum includes all of the structure's girders.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
503.1005.S	Removing and Resetting Prestressed Girders Enter Structure #	LS

Payment is full compensation for removing the girders; properly storing the girders; erecting the girders; replacing girders that are damaged by improper handling or storing.

stp-503-100 (20100709)

103. stp-504-010 Precast Concrete Wingwalls Enter Structure #, Item 504.1000.S.

A Description

This special provision describes furnishing, transporting, and placing precast wingwalls and cutoff walls.

B (Vacant)

C Construction

Alternate details for the precast wingwall units of equal strength and hydraulic capacity may be submitted to the engineer for approval. The contractor may build department-approved cast-in-place wingwalls as an alternative to precast apron endwalls. Build these endwalls conforming to standard spec 504.2 and standard spec 504.3.

D Measurement

The department will measure Precast Concrete Wingwalls Enter Structure #, completed according to the contract and accepted, as a single complete unit of work. Each unit shall consist of the four wingwalls required for one box culvert.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
504.1000.S.	Precast Concrete Wingwalls Enter Structure #	LS

Payment is full compensation for furnishing, transporting and placing the precast wingwalls and precast cutoff walls.

stp-504-010 (20080902)

104. stp-504-015 Precast Concrete Box Culvert, Enter dimension FT x Enter dimension FT, Item 504.2000.S.

A Description

This special provision describes furnishing and installing precast concrete box culverts of the size and length the plans show.

B Materials

Provide materials and fabricate Precast Concrete Box Culvert according to ASTM C1577, except that the concrete mixture shall contain not less than 565 pounds of Portland cement, blended cement or Portland cement plus pozzolanic admixture per cubic yard. Slab thickness, areas of reinforcement, and other details shall be as the plans show.

C (Vacant)

D Measurement

The department will measure Precast Concrete Box Culvert, Enter dimension FT x Enter dimension FT, completed according to the contract and accepted, in length by the linear foot in place. The box culvert will be measured on the centerline of the box along the flow line.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
504.2000.S.	Precast Concrete Box Culvert, Enter dimension FT x Enter dimension FT	LF

Payment is full compensation for furnishing, hauling and placing the box, including joint ties, and mastic.

stp-504-015 (20160607)

105. stp-504-020 Construction Alternative for Precast Concrete Wingwalls and Aprons, Structure Enter Structure #.

Instead of constructing # of inches inch x # of inches inch precast box culvert, wingwalls and aprons at this location, the contractor may construct # of inches inch x # of inches inch cast-in-place box culvert, wingwalls and aprons according to the plan details.

If the contractor constructs the alternate; the department will not measure the work but will base payment on the actual quantities set forth in the plans for the # of inches inch x # of inches inch precast concrete box culvert, including the precast wingwalls and the concrete masonry aprons.

stp-504-020 (20030820)

Use this special provision for bridges, culverts, and retaining walls that use high strength stainless steel rebar and stainless steel bar couplers. Delete the items not be used for your project from the title and from the table in section E Payment..

106. stp-505-005 Bar Steel Reinforcement HS Stainless Structures, Item 505.0800.S.; Bar Couplers Stainless No. 4, Item 505.0984.S; Bar Couplers Stainless No. 5, Item 505.0985.S; Bar Couplers Stainless No. 6, Item 505.0986.S; Bar Couplers Stainless No. 7, Item 505.0987.S; Bar Couplers Stainless No. 8, Item 505.0988.S; Bar Couplers Stainless No. 9, Item 505.0989.S; Bar Couplers Stainless No. 10, Item 505.0990.S; Bar Couplers Stainless No. 11, Item 505.0991.S.

A Description

This special provision describes furnishing and placing stainless steel reinforcing bars and associated stainless steel bar couplers.

Conform to standard spec 505 as modified in this special provision.

B Materials

B.1 General

Furnish stainless steel reinforcing bars conforming to ASTM A955 and to one of the following Unified Numbering System (UNS) designations: S31653, S31803, S32205, or S32304. Supply grade 60 bars, all of the same UNS designation. Conform to the chemical composition specified for the given UNS designation in ASTM A276 table 1.

Supply bars that are free of dirt, mill scale, oil, and debris by pickling to a bright or uniform light finish. The department may reject bars displaying rust/oxidation, questionable blemishes, or lack of a bright or uniform pickled surface.

Furnish chairs or continuous supports made of stainless steel or recycled plastic to support high-strength stainless bar steel reinforcement subject to the plastic chair restriction stated in standard spec 505.3.4(1).

Furnish couplers made from one of the UNS alloys allowed for bar steel.

Furnish tie wire made from one of the UNS alloys allowed for bar steel or from an engineer-approved plastic or nonmetallic material. Ensure that stainless steel tie wire is dead soft annealed.

B.2 Fabrication

Before fabrication, supply test results from an independent testing agency certifying that the reinforcement meets the requirements of Annex A1 of ASTM A955.

Bend bars conforming to standard spec 505.3.2 and according to ASTM A955. Bend and cut bars using equipment thoroughly cleaned or otherwise modified to prevent contamination from carbon steel or other contaminants. Use tools dedicated solely to working with stainless steel.

B.3 Control of Material

Identify reinforcement bars delivered to the project site with tags bearing the identification symbols used in the plans. Include the UNS designation, heat treat condition, heat number, grade corresponding to minimum yield strength level, and sufficient documentation to track each bar bundle to a mill test report.

Provide samples for department testing and acceptance according to CMM 8-50 Exhibit 1 requirements for concrete masonry reinforcement for uncoated bar steel.

Provide mill test reports for the project that do the following:

1. Verify that sampling and testing procedures and test results conform to ASTM A955, ASTM A276 table 1, and these contract requirements.
2. Include a chemical analysis with the UNS designation, heat lot identification, and the source of the metal.
3. Include tensile strength, yield strength, and elongation tests results conforming to ASTM A955 for each size furnished.
4. Certify that the bars have been pickled to a bright or uniform light finish.

C Construction

C.1 General

Ship, handle, store, and place the stainless steel reinforcing as follows:

1. Separate from regular reinforcement during shipping. Pad points of contact with steel chains or banding, or secure with non-metallic straps.
2. Store on wooden cribbing separated from regular reinforcement. Cover with tarpaulins if stored outside.
3. Handle with non-metallic slings.
4. Do not flame cut or weld. Protect from contamination when cutting, grinding, or welding other steel products above or near the stainless steel during construction.
5. Place on plastic or stainless steel bar chairs. If placing stainless steel chairs on steel beams, use chairs with plastic-coated feet.
6. Tie with stainless steel wire or an engineer-approved plastic or nonmetallic material.

Do not tie stainless steel reinforcing bars to, or allow contact with, uncoated reinforcing bars or galvanized steel. Maintain at least 1 inch clearance between stainless steel bars or dowels and uncoated or galvanized steel. Where 1 inch clearance is not possible, sleeve bars with a continuous polyethylene or nylon tube at least 1/8 inch thick extending at least 1 inch in each direction and bind with nylon or polypropylene cable ties. Sleeves are not required between stainless steel bars and shear studs. Stainless steel bars can be in direct contact with undamaged epoxy-coated bars.

Cut flush with the top flange or remove uncoated fasteners, anchors, lifting loops, or other protrusions into a bridge deck before casting the deck on prestressed concrete beams.

C.2 Splices

Splice as the plans show. Provide stainless steel couplers conforming to the minimum capacity, certification, proof testing, and written approval requirements of standard spec 550.3.3.4. The contractor may substitute stainless steel couplers for lap slices the plans show if the engineer approves in writing.

If increasing or altering the number or type of bar splices the plans show, provide revised plan sheets to the engineer showing the reinforcement layout, type, length, and location of revised bar splices and revised bar lengths. Obtain engineer approval for the location of new lap splices or substitution of mechanical bar couplers before fabrication. Ensure that new lap splices are at least as long as those the plans show.

D Measurement

The department will measure Bar Steel Reinforcement HS Stainless Structures by the pound, acceptably completed, computed from the nominal weights of corresponding sizes for carbon steel deformed bars in AASHTO M31 regardless of stainless steel alloy provided. The department will not measure extra material used if the contractor alters the reinforcement layout as allowed under C.2, extra material for splices or couplers the plans do not show, or the weight of devices used to support or fasten the steel in position.

The department will measure the Bar Couplers Stainless bid items as each individual coupler, 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
505.0800.S	Bar Steel Reinforcement HS Stainless Structures	LB
505.0984.S	Bar Couplers Stainless No. 4	EACH
505.0985.S	Bar Couplers Stainless No. 5	EACH
505.0986.S	Bar Couplers Stainless No. 6	EACH
505.0987.S	Bar Couplers Stainless No. 7	EACH
505.0988.S	Bar Couplers Stainless No. 8	EACH
505.0989.S	Bar Couplers Stainless No. 9	EACH
505.0990.S	Bar Couplers Stainless No. 10	EACH
505.0991.S	Bar Couplers Stainless No. 11	EACH

Payment for Bar Steel Reinforcement HS Stainless Structures is full compensation for furnishing and placing stainless steel reinforcing bars, including supports. Where the plans specify bar couplers, the

department will pay for the length of bars as detailed with no deduction or increase for installation of the coupler.

Payment for the Bar Couplers Stainless bid items is full compensation for providing couplers; including bar steel that is part of the coupler and not detailed in the plan; for threading reinforcing bars; for installing and coating the splice; and for supplying and testing 3 couplers.

stp-505-005 (20190618)

107. stp-505-010 Grouted Bar Couplers, Item 505.1000.S.

A Description

This special provision describes furnishing and installing grouted bar couplers at the interface of the cast-in-place concrete pier footings and the precast concrete pier columns and at the interface of the precast concrete pier columns to the precast concrete pier caps.

B Materials

B.1 Submittals

For each supplied coupler size, submit an independent test report confirming the compliance of the coupler with the following requirements:

- Develop 100 percent of the specified ultimate tensile strength (Fu) of the attached Grade 60 reinforcing bar. This equates to 90 ksi bar stress for an ASTM A-615 bar.
- The amount of time to achieve a minimum of 100 percent of the specified yield strength of the attached reinforcing bars which corresponds to the expected ambient temperature at installation. This value shall be used to develop the assembly plan timing. This data shall be the result of lab testing as performed by an approved testing laboratory.

Submit the specification requirements for the grout including required strength gain to develop the specified minimum yield strength of the connected reinforcing bar.

B.2 Material Requirements

Provide couplers that use cementitious grout placed inside a steel casting.

Threaded connections may be used for the portions of the coupler that are placed within the precast element if the strength of the coupler meets or exceeds the requirements of this specification.

The following grouted bar couplers are acceptable for use provided that the requirements of this specification are met:

NMB Splice Sleeve
Splice Sleeve North America, Inc.
192 Technology Drive, Suite J,
Irvine, California 92618-2409

Dayton Superior Sleeve-Lock Grout Sleeve
Dayton Superior
Corporate Headquarters
7777 Washington Village Dr., Ste. 130
Dayton, OH 45459

Erico Lenton Interlok
ERICO United States
34600 Solon Road
Solon, Ohio 44139

Or approved equal

Use grouted bar couplers that are epoxy coated and can join epoxy coated reinforcing steel without removal of the epoxy coating on the spliced bar. Touch up, per the manufacturer requirements and conforming to standard spec 505, any exposed areas of reinforcing steel bars or grouted bar coupler sleeves where the epoxy coating has been damaged.

Use grouted bar couplers that can provide 100 percent of the specified minimum tensile strength of the connecting Grade 60 reinforcing bar. This equates to 90 ksi for reinforcing conforming to ASTM A-615. Grouted bar couples may be oversized to provide additional setting tolerances as allowed by the manufacture.

Supply grout for the inside of the couplers from the coupler manufacturer. The grout must match the certified test report for the coupler. Do not substitute any other grout in the couplers unless additional certified test reports are submitted for the grout/coupler system.

C Construction

C.1 Quality Assurance

The performance of grouted splice couplers is related to the embedment length of the bars and the compressive strength of the grout. The following requirements for grouted splice couplers shall be met:

- The length of rebar anchor dowel must meet the minimum embedment specified in the manufacturer's manual.
- The reinforcing extensions between the precast elements must be within the manufacturers recommended tolerances.
- Grout mixing, water to grout ratio, mixing time, and shelf life of the grout must conform with the manufacturer's written instructions.
- All sleeves must be completely filled with grout.
- Make four sets of three - 2 inch grout cubes utilizing heavy brass molds with cover plates for testing according to AASHTO T 106. Cure the specimens according to AASHTO T 106. Test one set of cubes for compressive strength at a minimum of 24 hours (or to determine when to release bracing) and 28-days. Store extra sets for longer term testing, if necessary. Tests shall be according to ASTM C-109 and C-942.
- Protect all sleeves from any vibration, shock, or other excessive movement until temporary bracing is removed.
- The temperature of the sleeve at the time of grouting and during curing must exceed 50°F.

C.2 General Procedure for Making Connection using Grouted Bar Couplers

Use personnel that are familiar with installation and grouting of splice couplers that have completed at least two successful projects in the last two years. Provide documentation proving these requirements have been met. Training of new personnel within three months of installation by a manufacturer's technical representative is an acceptable substitution for this experience.

Remove and clean all debris from the joints before application of non-shrink grout.

Keep bonding surfaces free from laitance, dirt, dust, paint, grease, oil, or any contaminants other than water.

All joint surfaces must be Saturate Surface Dry (SSD) before connecting the precast elements.

Use heaters to maintain a minimum temperature of 50°F for the grouted bar couplers. Monitor the temperature of the covered sleeves until the temporary bracing is removed.

Follow the recommendations of the manufacturer for the installation and grouting of the

couplers. The general procedures are as follows:

- Determine the thickness of shims to provide the specified elevation within tolerance.
- Prepare, mix and apply the non-shrink grout according to the supplier's recommendations.
- Place non-shrink grout on the interface between the cast-in-place concrete pier footings and the precast concrete pier columns and at the interface of the precast concrete pier columns to the precast concrete pier caps. Crown the thickness of the grout toward the center of the joint so that the grout can be displaced outward as the precast element is lowered onto the joint. Take precautions to prevent the non-shrink grout from entering the coupler above (e.g. grout dams or seals).
- Set the precast element in place. Engage all couplers in the joint. Allow the non-shrink grout to seep out of the joint.
- Trowel off excess non-shrink grout to form a neat joint once the precast element is set, plumbed, and aligned. Pack grout into any voids around the joint perimeter.
- Flush out the coupler with clean potable water.
- Mix the coupler grout according to the manufacturer's recommendations for methods and proportions of mix and water.
- Make four sets of three 2-inch cube specimens for testing, as described in section C.1.
- Maintain a minimum temperature of 50°F in the grouted bar coupler during placing and curing until the full compressive strength of the grout is achieved per the manufacturer requirements.
- Pump the coupler grout into the coupler that is cast into the precast element. Start from the lower port. Pump until the grout is flowing freely from the upper port.
- Cap the upper port first and then remove the nozzle to cap the lower port. Proceed to the next coupler in a defined sequence.
- Cure the joint according to the non-shrink grout manufacturer's recommendations.

D Measurement

The department will measure Grouted Bar Couplers as each individual unit, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
505.1000.S	Grouted Bar Couplers	EACH

Payment for Grouted Bar Couplers is full compensation for furnishing and installing grouted bar couplers and supplying all materials including grout; and for making and testing grout cube specimens.

stp-505-010 (20161130)

506-035 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

If more than one structure, use supplemental.S numbers; for example, for removing the bearings on Structure B-40-250, use 506.7050.S.01, and for removing the bearings on Structure B-40-262, use 506.7050.S.02.

108. stp-506-035 Removing Bearings, Enter Structure #, Item 506.7050.S.

A Description

This special provision describes raising the girders and removing the existing bearings, as the plans show.

B (Vacant)

C Construction

Raise the structure's girders and remove the existing bearings as the plans show

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

D Measurement

The department will measure Removing Bearings Enter Structure # by the unit for each bearing removed, 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
506.7050.S	Removing Bearings, Enter Structure #	EACH

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

Cost of furnishing and installing the bearings will be paid for under separate bid items.

stp-506-035 (20130615)

506-040 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

If more than one structure, use supplemental.S numbers; for example, for bridge jacking Structure B-01-062, use 506.7060.S.01, and for bridge jacking Structure B-01-063, use 506.7060.S.02.

109. stp-506-040 Bridge Jacking, Enter Structure #, Item 506.7060.S.

A Description

This special provision describes raising the bridge, supporting it while the substructure units are being raised, and lowering the bridge back on bearings or bearing pads.

B (Vacant)

C Construction

Support jacks on or adjacent to existing substructure units. So that the entire bridge is raised simultaneously, use a sufficient number of jacks. Use approximately the same rate of jacking at each substructure unit.

Submit to the engineer for approval plans showing the method of raising the bridge. Show type of jacks, size of jacks, shoring or falsework, and sequence of work in the plan.

D Measurement

The department will measure Bridge Jacking, Enter Structure # as a single complete unit of work consisting of raising one bridge.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
506.7060.S	Bridge Jacking, Enter Structure #	LS

Payment is full compensation for furnishing all equipment and shoring; raising the bridge; and lowering the bridge onto the bearings.

stp-506-040 (20030820)

110. stp-506-045 Hinge Replacement, Item 506.7070.S.

A Description

This special provision describes replacing pin plates and pins at the hinge joints as the plans show conforming to standard spec 506 as modified in this special provision.

B (Vacant)

C Construction

Paint areas that become inaccessible after assembly in the field with one shop coat of an approved organic zinc rich primer and two coats of aluminum paint.

Use aluminum paint according to the following: Aluminum paint shall be made with aluminum pigment paste and varnish vehicle conforming to the requirements of the Specification for Aluminum Paint, AASHTO Designation: M69, Type I, except that the pigment paste for the first coat shall be non-leafing.

D Measurement

The department will measure Hinge Replacement as a unit, and each unit shall consist of the complete restoration of one hinge joint on one line of girders at one pier.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
506.7070.S	Hinge Replacement	EACH

Payment is full compensation for removing existing pins and plates, furnishing, fabricating and placing new material; and painting.

stp-506-045 (20030820)

111. stp-506-085 Prefabricated Steel Truss Pedestrian Bridge Enter Structure # LRFD, Item 506.8005.S.

A Description

This special provision describes providing a fully engineered, fabricated steel truss pedestrian bridge structure, including bearings the plans show. Conforming to standard spec part 5 as modified in this special provision. Regard these specifications as minimum standards for design and construction.

B Materials

B.1 Approved Manufacturers

The bridge shall be designed and manufactured by an approved designer and supplier selected from the department's approved products list.

To be eligible for this project, pre-fabricated bridges from other manufacturers must be pre-approved before the bid opening date. Applications for pre-approval may be submitted at any time. Prepare the application according to the department requirements. If needed, obtain information and assistance with the pre-approval process from the Structures Maintenance Section in the Bureau of Structures, by sending an email to the following address: DOTDLStructuresFabrication@dot.wi.gov

B.2 Design Requirements

Structural design of the pedestrian bridge shall be by a professional engineer registered in the State of Wisconsin.

Design the bridge according to the most recent edition of the AASHTO LRFD Bridge Design Specifications, all current interims, and the AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges, except as modified herein.

Design welded tubular connections according to the Structural Welding Code-Steel ANSI/AWS D1.1. The fracture critical requirements of ANSI/AWS D1.5 do not apply, and Charpy V-notch impact testing will not be required. Loading shall be as stated in Section 3 of the AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges. The bridge shall be a half-through truss with profile as the plans show with one diagonal per panel. Chords, diagonals, verticals, bracing, and floor beams may be tube steel. Tube steel shall have a minimum thickness of 1/4 inch, angles shall have a minimum thickness of 1/4-inch, C-shaped side dams shall have a minimum web thickness of 3/16-inch, and W-shapes shall have a minimum web thickness of 1/4-inch if painted or coated and 5/16-inch if not painted or coated. All other steel shapes shall have a minimum thickness of 5/16 inch unless contract plans allow a minimum thickness of less than 5/16 inch for other steel shapes. Field splices shall be bolted with ASTM F3125 Grade A325 high `strength bolts according to the "Specifications for Structural Joints Using High Strength Bolts". Type 3 bolts are required for weathering steel. For top and bottom chord field splices, splice plates are required on both the inside and outside surface of all four sides of the spliced tubing so that each bolt will be acting in double shear. Nuts may be welded to the splice plates to hold them in place during installation. When the collection of water inside a structural tube is a possibility, either during construction or during service, provide the tube with a drain hole at its lowest point.

If the profile grade line is on a crest vertical curve, camber the bridge to match the profile grade line the plans show plus the calculated dead load deflection. For a single span bridge, if the profile grade line has a constant slope (no vertical curve), camber the bridge to offset the calculated dead load deflection plus an amount equal to 1% of the bridge length. For a bridge with two or more spans, if the profile grade line has a constant slope (no vertical curve), camber the bridge to offset the calculated dead load deflection only. Concrete bridge decks shall be continuous over the floor beams. Concrete bridge decks may be supported by stay in place corrugated galvanized steel deck forms unless the contract plans specify removable deck forms only. The maximum depth of the stay in place corrugated steel deck forms shall be 2 inches. The steel area of the stay in place corrugated steel deck forms shall not be considered for the design of the concrete deck. Design of the stay in place corrugated steel deck forms shall be included with the truss design. The minimum slab thickness shall be 5.5 inches for removable deck forms and 6 inches for stay in place corrugated steel deck forms. For stay in place corrugated steel deck forms the 6 inch minimum is measured from the bottom of the deck form. Design the longitudinal reinforcing steel in the slab based on a wheel load located 1 foot from the face of the curb or toe plate, or a pedestrian live load of 90 psf, whichever controls.

Concrete strength (f'_c) shall be 4,000 psi and F_y of bar steel shall be 60,000 psi. A concrete mix with a unit weight of 120 pcf or 150 pcf may be used at the option of the manufacturer/contractor. Use a design dead load of 120 pcf or 150 pcf to match the concrete mix selected. Use load factors of 1.25 for dead load and 1.75 for live load for the design of the concrete slab and floor beams. Minimum concrete cover shall be 2 inches for top reinforcement and 1 inch for bottom reinforcement. Design the bridge for expansion and contraction with a temperature range of -30º F to 120º F. Utilize Teflon slip pads or other approved material on the sliding surface of the expansion bearing assembly.

Install protective screening, when required, as the plans show. Use protective screening that is 9 gauge chain link fence with 2 inch mesh, coated as the plans show.

B.3 Plan Requirements and Submittals

Submit shop drawings and calculations to the engineer conforming to standard spec 105.2 with electronic submittal to the fabrication library under standard spec 105.2.2. Department review does not relieve the contractor from responsibility for errors or omissions on shop drawings.

Make the submittal no later than 12 weeks after date of notice of contract approval. Allow the following time period in the construction schedule: 20 calendar days after the first receipt of plans by the StructuresDesign Section for a complete initial review of the design and plans submittal, and an additional 20 calendar days for any necessary revisions and/or corrections.

In the submittal, include the following:

1. Basic design criteria shown on the design plans.
2. Complete detailed drawings of all structural steel connections, sizes of members, span lengths between bearing points, skews, walkway widths, height of handrails and safety rails, bearing assembly details, anchor bolt locations, concrete deck reinforcement, design data, materials data, and dead and live load bearing reactions.
3. Engineer's certification. The plans shall be sealed, signed, and dated by a professional engineer registered in the State of Wisconsin.
4. One set of design calculations with independent checks.

The department will return shop drawings from this submittal, and any subsequent submittals, to the fabrication library, either indicating acceptance or marked with required revisions and/or corrections.

B.4 Weld Testing

An independent agency shall perform nondestructive weld testing; the manufacturer shall pay for this testing. All welds are to be visually inspected except as noted below.

Ten percent of all fillet welds shall be magnetic particle tested.

All full penetration welds of chords shall be ultrasonically or radiographically tested.

Bottom chord welded tube splices for tube thicknesses less than 3/8 inches thick shall be radiographically tested or covered with fillet welded splice plates with non-intersecting welds which develop 75% of the spliced member strength.

Submit electronically a written testing report upon completion.

C Construction

C.1 Delivery and Erection

Deliver the bridge by truck to the location that is nearest to the site and accessible by road. The contractor is responsible for unloading the bridge from the trucks at the time of arrival.

The manufacturer shall notify the contractor in advance of the expected arrival time. Information regarding delays after the trucks depart the plant such as inclement weather, delays in permits, rerouting by public agencies, or other circumstances shall be passed on to the contractor as soon as possible.

The manufacturer shall provide an erection procedure to the contractor and shall advise the contractor of the actual lifting weights, attachment points, and all other information needed to install the bridge. Unloading, splicing, bolting, and providing proper lifting equipment as well as all tools, equipment, labor, and miscellaneous items required to complete the work is the responsibility of the contractor. The procedure for bolting field splices shall be given to the contractor by the manufacturer.

C.2 Finishes

When unpainted steel is specified on the plans, all fabrications shall be produced from high strength, low alloy, atmospheric corrosion resistant ASTM A847 cold-formed welded square and rectangular tubing,

ASTM A606 sheet, and/or ASTM A588, ASTM A242, or ASTM A709 Grade 50W plate and structural steel shapes (F_y=50,000 psi) with a minimum corrosion index of 5.8 per ASTM G101.

Blast-clean all exposed surfaces of weathering steel according to Steel Structures Painting Council Surface Preparation Specifications No. 7 Brush-Off Blast Cleaning (SSPC-SP7), latest edition. Exposed surfaces of weathering steel shall be defined as those surfaces seen from the deck and from outside the structure. Stringers, floor beams, lower brace diagonals and the inside face of the truss below the deck, and bottom of the bottom chord do not need to be blasted.

When the plans specify painted steel, paint the bridge with a three-coat epoxy system from the department's approved products list as specified in standard spec 517.

D Measurement

The department will measure Prefabricated Steel Truss Pedestrian Bridge Enter Structure # LRFD as a single lump sum unit of work for the bridge, 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
506.8005.S	Prefabricated Steel Truss Pedestrian Bridge Enter Structure # LRFD	LS

Payment is full compensation for designing, manufacturing, transporting and erecting the pedestrian bridge; furnishing bearing plates, pads, bolts, anchors bolts, and grout. The department will pay separately for painting under the Painting Epoxy System Steel Truss (structure) bid item.

stp-506-085 (20180628)

112. stp-509-005 Removing Concrete Masonry Deck Overlay Enter Structure #, Item 509.9005.S.

A Description

This special provision describes removing concrete bridge deck overlays 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:

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

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

D Measurement

The department will measure Removing Concrete Masonry Deck Overlay Enter Structure # in area by the square yard, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
509.9005.S	Removing Concrete Masonry Deck Overlay Enter Structure #	SY

Payment is full compensation for removing the concrete masonry; and for properly disposing of all materials.

stp-509-005 (20171130)

113. stp-509-010 Removing Asphaltic Concrete Deck Overlay Enter Structure #, 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 Enter Structure # 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 Enter Structure #	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)

114. stp-509-015 Removing Polymer Overlay Enter Structure #, Item 509.9015.S.

A Description

This special provision describes removing the polymer overlay. Perform work conforming to standard spec 204.

B (Vacant)

C Construction

Remove the overlay by scraping, grinding, milling, or other approved method without damaging the underlying concrete. Submit removal procedures to the engineer for approval before beginning. Do not remove more than 1/4"of the existing concrete surface. Leave a uniform textured finish over the entire concrete surface.

D Measurement

The department will measure Removing Polymer Overlay Enter Structure # 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
509.9015.S	Removing Polymer Overlay Enter Structure #	SY

Payment for Removing Polymer Overlay is full compensation for removing the polymer; and for properly disposing of all materials.

stp-509-015 (20171130)

115. stp-509-020 Epoxy Crack Sealing, Item 509.9020.S.

A Description

This special provision describes sealing vertical cracks in abutments as the plan details show.

B Materials

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

C Construction

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

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

D Measurement

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

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
509.9020.S	Epoxy Crack Sealing	LF

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

stp-509-020 (20100709)

116. stp-509-025 Epoxy Injection Crack Repair, Item 509.9025.S; Cored Holes 2-Inch Diameter, Item 509.9026.S.

A Description

This special provision describes repairing structural cracks in piers using the epoxy injection method, and coring 2 inch diameter core samples the repaired cracks.

Conform to standard spec 509 as modified in this special provision.

B Materials

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

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

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

1. Adequate strength to hold the injection fittings firmly in place to resist injection pressures and prevent leakage during injection.
2. Non-sag consistency.
3. Insensitive to the presence of water.
4. Controlled cure time.
5. Two-component epoxy resin.
6. 100% solids by weight.
7. Applicable to wet surfaces.
8. Viscosity should be paste.

C Construction

C.1 Injection Equipment

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

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

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

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

C.2 Surface Area Preparation

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

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

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

C.3 Epoxy Injection

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

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

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

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

C.4 Finishing and Clean-Up

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

C.5 Core Sampling

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

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

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

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

D Measurement

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

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

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
509.9025.S	Epoxy Injection Crack Repair	LF
509.9026.S	Cored Holes 2-Inch Diameter	EACH

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

stp-509-025 (20100709)

All surface preparation involving concrete removals, patching, and crack injection is to be detailed and paid for separate from this STSP.

117. stp-509-030 Polymer Overlay, Item 509.5100.S.

A Description

This special provision describes providing two layers of a two-component polymer overlay system to the bridge decks the plans show.

B Materials

B.1 General

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

B.2 Polymer Resin

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

Property	Requirements	Test Method
Gel Time[1]	15 - 45 minutes @ 73° to 75° F	ASTM C881
Viscosity[1]	7 - 70 poises	ASTM D2393, Brookfield RVT, Spindle No. 3, 20 rpm
Shore D Hardness[2]	60-75	ASTM D2240
Absorption[2]	1% maximum at 24 hr	ASTM D570
Tensile Elongation[2]	30% - 70% @ 7 days	ASTM D638
Tensile Strength[2]	2000 to 5000 psi @ 7 days	ASTM D638
Chloride Permeability[2]	<100 coulombs @ 28 days	AASHTO T277

[1] Uncured, mixed polymer binder

[2] Cured, mixed polymer binder

Ensure that the polymer resin when mixed with aggregate has the following properties:

Property	Requirement[1]	Test Method
Minimum Compressive Strength	1,000 psi @ 8 hrs 5,000 psi @ 24 hrs	ASTM C579 Method B, Modified[2]
Thermal Compatibility	No Delaminations	ASTM C884
Minimum Pull-off Strength	250 psi @ 24 hrs	ASTM C1583

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

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

B.3 Aggregates

Furnish natural or synthetic aggregate that is non-polishing; clean; free of surface moisture; fractured or angular in shape; free from silt, clay, asphalt, or other organic materials; and conform to the following:

Aggregate Properties

Property	Requirement	Test Method
Moisture Content[1]	1/2 of the measured aggregate absorption, %	ASTM C566
Hardness	≥6.5	Mohs Scale
Fractured Faces	100% with at least 1 fractured face & 80% with at least 2 fractured faces of material retained on No.16	ASTM D5821
Absorption	≤1%	ASTM C128

[1] Sampled and tested by the department before placement.

Gradation

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

B.4 Approval of Bridge Deck Polymer Overlay System

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

B.4.1 Product Data Sheets and Specifications

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

B.4.2 Certified Report of Test or Analysis

Conform to the following:

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

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

C Construction

C.1 General

Ensure that the overlay system is 1/4 inch thick or thicker.

Conform to the following:

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

Pre-Installation Meeting: Conduct a pre-installation meeting with the manufacturer's representative and the engineer before construction. Discuss the field review findings, verification testing of the surface preparation and establish procedures for maintaining optimum working conditions and coordination of work. Furnish the engineer a copy of the recommended procedures and apply the overlay system according to the manufacturer's instructions. Supply for the engineer's use for the duration of the project, a Concrete Surface Profile (CSP) chip set of 10 from the International Concrete Repair Institute (ICRI).

Manufacturer's Representative: An experienced manufacturer's representative familiar with the overlay system installation procedures shall be present at all times during surface preparation and overlay placement to provide quality assurance that the work is being performed properly. This requirement may be reduced at the engineer's discretion.

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

C.2 Deck Preparation

C.2.1 Deck Repair

Remove all asphaltic patches and unsound or disintegrated areas of the concrete decks as the plans show, or as the engineer directs. Work performed to remove and repair the concrete deck will be paid for under other items.

Use deck patching products that are compatible with the overlay system. Patching materials with magnesium phosphate shall not be used. Place patches after surface is prepared via shot blasting and cleaning as described in Section C.2.2 of this specification. Portland cement concrete patches shall be used for joint repairs and full depth deck repairs with a plan area larger than 4 sf, unless approved otherwise by the Structures Design Section. If rapid-set concrete is used, place patches per the manufacturer's recommendation. If Portland cement concrete is used, place patches per standard spec 509.3.9.1.

Deck patching shall be filled and properly finished prior to overlay placement. Do not place overlay less than 1 hour, or per the manufacturer's recommendation, after placing rapid-set concrete patches in the repair areas. Do not place overlay less than 28 days after placing Portland cement concrete patches in the repair areas.

C.2.2 Surface Preparation

Determine an acceptable shotblasting machine operation (size of shot, flow of shot, forward speed, and/or number of passes) that provides a surface profile meeting CSP 5 (medium-heavy shotblast) according to the ICRI Technical Guideline No. 310.2. If the engineer requires additional verification of the surface preparation, test the tensile bond strength according to ASTM C1593. The surface preparation will be considered acceptable if the tensile bond strength is greater than or equal to 250 psi or the failure area at a depth of 1/4 inches or more is greater than 50 percent of the test area. Continue adjustment of the shotblasting machine and necessary testing until the surface is acceptable to the engineer or a passing test result is obtained.

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

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

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

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

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

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

C.2.3 Transitional Area

If the plans show, create a transitional area approaching transverse expansion joints and ends of the deck using an approved mechanical or blasting method. Remove 1/4 inch to 5/16 inch of concrete adjacent to the joint or end of deck and taper a distance of 3 feet.

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

C.3 Overlay Application

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

1. Ambient air temperature is below 50 F or above 100 F.
2. Deck temperature is below 50 F.
3. Moisture content in the deck exceeds 4.5 percent when measured by an electronic moisture meter or shows visible moisture after 2 hours when measured in accordance with ASTM D4263.
4. Rain is forecasted during the minimum curing periods listed under C.5.
5. Materials component temperatures below 65 F or above 99 F.
6. Concrete deck age is less than 28 days.
7. The deck temperature exceeds 100 F.
8. If the gel time is 10 minutes or less at the predicted high air temperature for the day.

After the deck has been shotblasted or during the overlay curing period, only necessary surface preparation and overlay application equipment will be allowed on the deck. Provide appropriate protective measures to prevent contamination from equipment allowed on the deck during preparation and application operations. Begin overlay placement as soon as possible after surface preparation operations.

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

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

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

Before opening to traffic, clean expansion joints and joint seals of all debris and polymer. A minimum of 3 days following opening to traffic, remove loosened aggregates from the deck, expansion joints, and approach pavement.

C.4 Application Rates

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

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

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

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

C.5 Minimum Curing Periods

As a minimum, cure the coating as follows:

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

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

C.6 Repair of Polymer Overlay

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

D Measurement

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

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
509.5100.S	Polymer Overlay	SY

Payment is full compensation for preparing the surface; for tensile bond testing; for creating the transitional area; for providing the overlay; for cleanup; and for sweeping/vacuuming and disposing of excess materials.

The department will pay separately for deck repairs.

stp-509-030 (20200629)

Use this special provision for bridges receiving polymer modified asphalt overlays. Delete the inappropriate items for your project from the title and from the table in section E Payment.

118. stp-509-035 HMA Overlay Polymer-Modified, Item 509.3500.S.

A Description

This special provision describes providing a polymer-modified HMA overlay on bridge decks.

B Materials

B.1 Mixture Composition

Furnish a mixture composed of fine and coarse aggregates, mineral filler if used, asphalt cement, and polymer modifier additive. Ensure that the final job mix design conforms to polymer modifier manufacturer requirements and is approved by the engineer.

Use fine and course aggregate conforming to standard spec 460.2.2. Do not use blast furnace slag, expanded shale, porous limestone, lightweight aggregates, or other porous aggregate. Ensure that mineral filler, if used, conforms to standard spec 450.

Use asphalt cement conforming to standard spec 455 and virgin thermoplastic polymer modifier additive. Furnish additive packaged in 22.5-pound meltable polyethylene bags, in 2,025-pound super sacks containing 45 units per sack, or as bulk material in tankers.

B.2 Deck Preparation Materials

Furnish tack coat and edge sealer conforming to the polymer modifier manufacturer's requirements. Furnish rubberized asphalt joint sealer conforming to ASTM D3405, or if the polymer modifier manufacturer recommends, use a 20 inch wide strip of geotextile paving fabric applied according to their recommendations.

C Construction

C.1 General

Ensure that an on-site polymer modifier manufacturer representative oversees mixture production, placement, and compaction of polymer-modified HMA.

C.2 Proportioning and Mix Design

Seven days before the pre-construction meeting, submit the name and location of the intended sources for bituminous pavement products. Furnish HMA mixture from an engineer-approved automated plant conforming to ASTM D995 and SS405 and equipped with interlocks and printouts.

Coordinate with the polymer modifier manufacturer to formulate a job mix formula (JMF). Submit a JMF to the engineer that shows the gradation and conforms to the generic requirements under this special provision. As a part of the submittal include the following:

- Mineral aggregate sources and types.
- Grade and source of bituminous material.
- Type and source of all asphalt modifiers.
- Samples of aggregates to be used.

Submit a complete HMA mix design to the engineer according to department test method 1559 described in CMM 8.65.5. Submit a new JMF for engineer review if changing the production plant, aggregate, asphalt, or asphalt modifier.

C.3 Verification of the JMF

Unless the asphalt content (AC) of specimens used to develop the JMF is the same as the proposed design AC, prepare additional specimens at the proposed AC to ensure that gyratory test results accurately represent the design.

Generic Formulation of the PolymerModified HMA Mixture

Sieve Size, metric (imperial)	Nominal size of aggregate/Percent passing	Gradation Control on JMF
	9.5mm	
12.5 mm (1/2")	100	± 7 %
9.5 mm (3/8")	90 – 100	± 7 %
4.75 mm (#4)	55 – 85	± 7 %
2.36 mm (#8)	32 – 67	± 4 %
1.18 mm (#16)	Report	± 4 %
600 microns (#30)	Report	± 4 %
300 microns (#50)	7 – 23	± 4 %
150 microns (#100)	Report	± 4 %
75 microns (#200)	2 – 10	± 2 %

AC (% Total Mix) 5.0% minimum

Thermoplastic Polymer 2.25% by weight of total mix

Generic Minimum/Maximum Desired Physical Properties of the Design Mixture

Volumetric mix design parameters		
Volumetric parameter	Control requirement	Nominal size of aggregate/percent passing
		9.5mm
Gyratory volumetric requirements		
VMA	Minimum	16.5%
VFA	Minimum	90.0%
$\%G_{mm}$	@ N_{ini} (6 gyrations)	>87.0%
$\%G_{mm}$	@ N_{des} (50 gyrations)	99.0%
$\%G_{mm}$	@ N_{max} (75 gyrations)	>99.0%

Target Void Percentage: 1%

Weigh and heat aggregates for batching in an oven to 401 - 419 F. Add polymer modifier at a rate of 45 pounds per ton of mix or 2.25 percent of total batch weight. Dry mix the heated aggregate and the polymer modifier for 10 seconds at 374 - 383 F; introduce AC-binder at 302 - 320 F; and mix together for 90 seconds. Mix until aggregates are completely and uniformly coated. Verify that the temperature of the finished mix is 347 - 374 F. After mixing is completed, condition the material according to AASHTO R30 before compacting. Compact at 338 - 356 F. Evaluate the gyratory specimen at N_{ini}= 6, N_{des}=50, and N_{max}=75 gyrations regardless of class designation or aggregate structure.

After reviewing the JMF, the engineer will authorize initial placement. Once production begins, provide the engineer daily certification that in-place materials conform to the JMF and contract specifications.

Polymer modifier manufacturer personnel shall certify material production, take samples, and are authorized to reject material not meeting contract specifications. The polymer modifier manufacturer shall retain samples available upon engineer request for department examination and testing throughout the contract duration. The engineer may take additional independent samples and examine certifications to verify material quality.

Provide the engineer with access to the plant and equipment as necessary to review and verify certifications of material quality. The engineer may reject affected mixture placed if the contractor fails to

perform quality control or submits an incorrect certification. The engineer may halt production and require the contractor to dispose of material due to temperature, oxidation, contamination, segregation, or incomplete coating of aggregate. The engineer may base rejection on visual inspection.

C.4 Deck Preparation

After deck patching and before placing polymer-modified HMA, prepare the deck surface. Cure the repaired deck a minimum of 7 days before placing the polymer-modified HMA overlay. Ensure that a polymer modifier manufacturer representative is present to oversee edge sealer and tack coat application.

Prepare the entire deck surface area by shot blasting. Include the vertical face of curbs or parapets to the specified finish overlay surface elevation. Collect and dispose of used steel shot and dust. Remove pavement-marking lines within the cleaning area to prevent bleeding through the tack coat. After shot blasting operations, clean the deck by sweeping, air blasting, pressure washing, or other engineer-approved method.

Clean the existing surfaces to remove any milled material or debris which would reduce or prevent bonding. Ensure that the surface is clean, dry, and free from loose debris or other contaminants. Saw cut and seal construction joints. Apply edge sealer and tack coat. Place an impermeable hot-mix waterproofing asphalt course on the cleaned and tack coated bridge deck, to the lines, grades, width, and depth the plans show.

Seal all edges of the planned day's placement of the asphalt waterproofing course with 4-6 inches of edge sealer applied at the manufacturer specified rate. Ensure that vertical edges of headers, drains, scuppers, expansion joints, or other areas where compaction may be difficult to achieve are adequately sealed. For vertical edges, apply sealer from the specified finish overlay surface elevation and out horizontally 4-6 inches. Maximize drying time by sealing as early as possible on the day of, or even the day before, overlay placement.

C.5 Placement

Before placing tack coat, ensure that the deck moisture is 6 percent or less. Apply tack coat at a rate of 0.07 to 0.15 gallons per square yard without puddles for concrete decks and at 0.04 to 0.1 gallons per square yard for steel decks. Cover and protect all deck drains and joints before paving.

Place the polymer-modified material in a uniform 2 inch thick layer.

Seal butt joints made during paving that have cooled below 150 F before placing the adjoining asphalt lift. Saw cut construction joints 1/2 inch wide and fill to within 1/8 inch of the surface with joint sealer. Do not overfill sawed joints since excess sealer will cause surface ripples requiring contractor correction.

Apply edge sealer to all terminations of the paved asphalt, including curb lines and deck joints, as soon as possible after the pavement has cooled.

C.6 Compaction

Because of higher compaction temperatures, use extra water applied evenly across the mat to keep material from sticking to the steel rolls.

Compact within a temperature range of 212 - 374 F conforming to standard spec 450.3.2.6. Use a minimum of two static rollers, one for break down and one for finish rolling. Have a third roller available on the job as a backup. Ensure that roller unit compression is 250 pounds or more per inch of driving roll width. Use three-wheel and tandem steel-wheel rollers with a manufacturer's rating of eight tons or more or use three-axle tandem steel-wheel rollers with a manufacturer's rating of 12 tons or more. Do not use pneumatic tired rollers. The contractor may use other compaction means in areas that cannot be accessed by the specified roller. The contractor may use an asphalt vibrator wacker with a water system.

Breakdown roll closely behind the spreading operation and finish roll to remove mat imperfections. Use a straight rolling pattern aligned with the paving direction. Do not turn except as necessary to move from pass to pass. Use the pattern and frequency the polymer modifier manufacturer's representative specifies. Do not change paving or rolling procedures without approval from the polymer modifier manufacturer's representative.

The department will waive the contract QMP HMA pavement nuclear density requirements for polymer-modified HMA overlay work.

D Measurement

The department will measure HMA Overlay Polymer-Modified by the ton, 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
509.3500.S	HMA Overlay Polymer-Modified	TON

Payment is full compensation for providing overlays including mixture design and surface preparation; and for the polymer modifier manufacturer's on-site mix production and placement oversight.

The department will pay separately for repairs under the Curb Repair, Concrete Surface Repair, and Full-Depth Deck Repair bid items as specified in standard spec 509.

stp-509-035 (20141107)

119. stp-509-050 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)

120. stp-509-055 Cleaning Concrete Surfaces, Item 509.0400.S.

A Description

This special provision describes cleaning concrete surfaces.

B Materials

Furnish non-bituminous joint sealer conforming to standard spec 502.2.9.

C Construction

C.1 Blast Cleaning Operation

Blast clean the concrete surfaces 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, prepare a representative trial area, 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 surface with water according to ASTM D4258. Remove all dust and loose material from surfaces that are to be coated with protective surface treatment. Provide an adequate drying time of the surfaces of at least 24 hours before coating with the surface treatment. Remove all loose concrete, dirt, dust, or blast material that remains, as the engineer directs.

C.3 Joint Sealing

Before cleaning operations, remove existing non-bituminous joint sealer in the areas of the surfaces to be cleaned as the engineer directs. Apply non-bituminous joint sealer after application of protective surface treatment.

D Measurement

The department will measure Cleaning Concrete Surfaces by the square yard, 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
509.0400.S	Cleaning Concrete Surfaces	SY

Payment is full compensation for abrasive blast cleaning; for water cleaning; for all additional clean-up of the concrete surfaces and surrounding area; and for providing joint sealer.

stp-509-055 (20161130)

509-060 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this item on projects where a concrete masonry overlay is not placed (i.e. asphalt, polymer or no overlay is placed) to fill the following areas: Preparation Decks, Joint Repair, Full-Depth Deck Repair, Curb Repair. Also include the item, "Sawing Pavement Deck Preparation Areas" for the areas of Preparation Decks.

121. stp-509-060 Concrete Masonry Deck Repair, Item 509.2100.S.

A Description

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

B Materials

B.1 Neat Cement

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

B.2 Concrete

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

1. The contractor may increase slump of grade E concrete to 3 inches.
2. The contractor may use ready-mixed concrete.

Provide QMP for class II ancillary concrete as specified in standard spec 716.

C Construction

C.1 Neat Cement

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

C.2 Placing Concrete

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

C.3 Curing Concrete

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

D Measurement

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

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

The department will not measure wasted concrete.

E Payment

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

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

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

stp-509-060 (20191121)

509-065 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this special provision for bridges that will be receiving concrete masonry overlays after the existing concrete masonry overlay is removed. Use standard bid item 509.0500 for bridges that will be receiving their first concrete masonry overlay.

122. stp-509-065 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)

509-070 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this special provision for areas of Preparation Decks on asphalt or polymer overlay projects and for deck repairs that will not receive an overlay. Also include STSP 509-060 "Concrete Masonry Deck Repair".

123. stp-509-070 Sawing Pavement Deck Preparation Areas, Item 509.0310.S.

A Description

This special provision describes sawing around deteriorated areas requiring deck repairs under the Preparation Decks bid items on decks receiving asphalt or polymer overlays and for deck repairs that will not receive an overlay.

B (Vacant)

C Construction

The department will sound and mark areas of deteriorated concrete that require deck preparation. The engineer may identify and mark additional areas as the work is being performed.

Wet cut a minimum of 1 inch deep and at least 2 inches outside of the marked areas. Bound each marked area by providing cuts aligned parallel and perpendicular to the deck centerline.

Remove sawing sludge after completing each area. Do not allow sludge or resulting residue to enter a live lane of traffic, storm sewer, stream, lake, reservoir, marsh, or wetland. Dispose of sludge at an acceptable material disposal site located off the project limits or, if the engineer allows, within the project limits.

D Measurement

The department will measure Sawing Pavement Deck Preparation Areas by the linear foot, acceptably completed, measured as the total linear feet of bounding cuts.

The department will not measure for payment over-cuts or cuts made beyond what is required to bound engineer-marked deterioration limits.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
509.0310.S	Sawing Pavement Deck Preparation Areas	LF

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

stp-509-070 (20180628)

124. stp-513-090 Removing and Resetting Tubular Railing Enter Structure #, Item 513.9005.S.

A Description

This special provision describes removing tubular railing and posts from existing bridge parapets, storing them, and then resetting them when the new parapet is complete.

B (Vacant)

C Construction

Remove the tubular railing and posts, taking care not to damage them. Store the tubular railing and posts in an area away from construction activities to preclude damage to them.

In the event that damage does occur to any item that is designated for re-use in the new work, repair or replace the damaged item at no expense to the department.

D Measurement

The department will measure Removing and Resetting Tubular Railing Enter Structure # as a single complete unit of work, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
513.9005.S	Removing and Resetting Tubular Railing Enter Structure #	LS

Payment is full compensation for removing the tubular railing and posts; properly storing the tubular railing and posts; and for resetting the tubular railing and posts.

stp-513-090 (20100709)

125. stp-516-060 Sheet Membrane Waterproofing, Item 516.0600.S.

A Description

This special provision describes preparing the surface, furnishing and installing a primer, waterproofing membrane, and hot rubberized sealer or mastic, or both, on the bridge decks to be overlaid with asphaltic concrete as the plans show.

B Materials

B.1 Waterproofing System

Provide a material in the waterproofing system that is specifically designed for use with an asphaltic concrete overlay. The membrane shall consist of a cold-applied, self-adhering membrane incorporating a heat resistant woven or non-woven fabric or fiberglass reinforcing laminated in between layers of polymer modified bitumen or SBS modified rubberized asphalt. The membrane shall have a release film, polyester or polyethylene on the down side and may have a thin spun bonded open weave polyester fabric on the up side that will bond with the asphaltic concrete overlay; yet will permit driving rubber-tired trucks, pavers and other construction vehicles on the membrane covered bridge deck. Provide a composite sheet membrane with the following properties:

Property	Test Method	Specific Value
Width		36 inch min.
Tensile Strength	ASTM D 412	50 lb/in or 700 psi min.
Thickness		60 mils to 80 mils
Puncture Resistance	ASTM E 154	40 lb. min.
Permeance	ASTM E 96, Method B	0.05 US Perms max.
Low Temperature Pliability	ASTM D 146, 1-inch Mandrel @ -25° F	No cracks or splits at 180° bend
Water Absorption	ASTM D570, 72 hr.	0.25% max.
Peel Adhesion	ASTM D 903	5 lb/in width min.
Compound Softening Point	ASTM D 36	210° F ± 20° F

Provide rubberized asphalt compound containing not more than 15% inorganic residue or filler material.

Provide primer, mastic and/or hot rubberized asphalt sealer conforming to the specified properties required by the manufacturer of the waterproofing membrane.

B.2 Materials Certification

Before membrane approval for initial submittals and/or upon reformulation of membrane material compounds, submit to the engineer a notarized certification by an independent test laboratory stating that the materials conform to the requirements of these specifications. The certification shall include or have attached specific results of tests performed on the material supplied. The engineer may at his option require samples of any material for testing. Previously approved membranes will be provisionally accepted by manufacturer's certification on their company letterhead, but may be subject to control or approval, or both by subsequent testing.

C Construction

C.1 Application Methods

Apply materials in strict accordance to the manufacturer's instructions. In order to install the waterproofing membrane, the deck temperature shall be a minimum of 45° F and rising. Before applying the system, become acquainted with the materials specified and their handling characteristics and become thoroughly familiar with the construction procedures recommended by the manufacturer. Furnish a copy of the recommended procedures to the engineer. To establish procedures for maintaining optimum working conditions and to coordinate work related to adjacent construction, hold a pre-installation conference with

a manufacturer's representative, the engineer, and other affected contractors before starting construction. To provide quality assurance that the membrane has been properly installed, a manufacturer's representative familiar with the membrane installation procedures shall be present during placement of the membrane.

Clean and make free of asphaltic patches, fast setting concrete patches, and all spalled, unsound or disintegrated areas of concrete the entire deck area of the structures being overlaid including curbs and parapets. Provide a minimum cure time of three days for repaired areas before resuming construction operations on the deck, and provide a minimum cure time of seven days before placing the membrane. Repairing these areas with concrete masonry deck patching, concrete surface repair or curb repair will be paid for separately. Before placing the membrane, prepare the surface of the entire deck surface areas of the structures by shot blast cleaning.

The shot blast cleaning shall include the vertical face of the curbs or parapets to the height of the specified finish pavement surface and elevation. The shot blasting machine used for this procedure shall be capable of propelling steel shot against the deck surface in a uniform method to remove all foreign material and loose concrete. The shot blasting operation shall include collection and disposal of used steel shot and dust. As per manufacturer's recommendations, all pavement-marking lines within the cleaning area shall be sufficiently removed to prevent bleeding through the primer. After shot blasting operations, remove by sweeping, compressed air blasting, pressure washing with water or by other satisfactory means any foreign material remaining on the concrete deck. The deck shall be clean, dry and free from mud, dirt, sand, oil or grease and any other contaminants before application of the primer. No vehicles or equipment will be permitted on the concrete deck after surface preparation except those necessary for the installation of the waterproofing membrane. The engineer will inspect the concrete deck before the application of the primer. Do not begin application of either the primer or membrane until after the engineer grants approval.

To coat all surfaces of the deck, curb and/or parapet that will be covered with the membrane, apply primer uniformly as recommended by the manufacturer. Use roller, brush or spray to apply primer to the surfaces. If spraying is used, an approved method of protecting the environment is required.

Allow the primer to dry until tack free (approximately forty-five minutes) before applying the membrane. Apply primer only to an area that will be covered with the membrane within the same calendar day. If the surface of the concrete deck becomes contaminated, clean and reprime the area.

Apply primer on the curb faces, raised deck drains and expansion joints to the top of the proposed asphaltic concrete overlay. Take care to ensure that all inside corners are coated with primer.

After the primer has dried to a tack free condition, apply one layer of membrane to the deck starting on the low side edge.

To form a bond with the primed deck, remove the release film from the membrane on the tacky side while the membrane is rolled face down. Apply the membrane by hand methods or by using mechanical applicators. Overlap a minimum of 2.5 inches at the edges of each strip and overlap the membrane in such a manner to provide a shingling effect toward the low side of the deck cross section. Overlap a minimum of 5 inches at the ends of each strip of membrane and overlap the membrane in such a manner to provide a shingling effect toward the lower side of the deck profile. Roll the entire membrane surface with a rubber tire roller to ensure firm and uniform contact with the primed surface. Use special care to ensure that the membrane is uniformly adhered to the concrete and that the entire membrane is free of wrinkles, air bubbles, and other placement defects. In the event bubbles or blisters do form under the membrane, puncture the bubbles or blisters with a sharp pointed instrument such as an awl and press the membrane firmly into contact with the deck. Repair any membrane punctures, tears, holes, and misaligned or inadequate seams with a patch of waterproofing membrane sized as required to ensure that the membrane is watertight. Apply membrane flashing to raised deck drains and expansion joints and cut, fit and seal the membrane flashing with mastic or by heat sealing.

Apply the primer and membrane to an area at least 6 inches wider than will be paved with asphalt to provide a lap with subsequent application of primer and membrane when required in order to accommodate traffic control staging. Cover the inside corners of curbs or parapets and all other perimeter edges with narrow strips (flashing strips of approximately 12 inches), hot rubberized sealer, or mastic according to the manufacturer's guidelines. As an additional method of ensuring a watertight bond, all terminating edges, transverse overlaps and longitudinal overlaps may be heated with a propane torch to soften the top mat and fuse the surfaces together.

The applicator foreman or leadworker shall be certified by the manufacturer of the waterproofing membrane as approved applicators, and shall be present during all applications.

C.2 Overlaying the Membrane with Asphaltic Concrete

Construct the asphaltic concrete overlay according to scheduling requirements elsewhere in the contract. Cover all exposed membrane with the specified asphaltic concrete mix within five days after installation. Only rubber-tired construction vehicles shall be permitted on the membrane. Use caution not to turn the tires when a vehicle is stationary. To prevent tearing the membrane, avoid sudden starts, stops, accelerations, or decelerations. Chemical solvents, gasoline, diesel fuel, mineral spirits, etc. or other deleterious substances shall not be spilled or leaked onto the membrane. Before covering the membrane with asphaltic concrete overlay, clean the membrane of mud, dirt, sand, oil, grease, or any other contaminants, and dry the membrane. Patch contaminated areas as required by the engineer. When required to accommodate traffic control staging, the construction of the asphaltic concrete overlay shall stay at least 6 inches away from the terminating edge of the membrane to provide for overlap.

The placement temperature of the asphaltic concrete shall be between 300° F and 350° F. Do not place asphaltic concrete on the membrane outside of this temperature range. The temperature of the uncompacted mat of asphaltic concrete shall not fall below 280° F before rolling. The thickness of the asphaltic concrete layers shall be as the plans show; the initial layer shall have a minimum compacted thickness of 1½ inches. The membrane applicator contractor shall have a minimum of one employee present during all asphaltic concrete paving operations to ensure that all necessary membrane repairs will be accomplished.

D Measurement

The department will measure Sheet Membrane Waterproofing, installed according to the contract and accepted, in area by the square yard. Measurement shall be based on the horizontal distance between the face of the curbs or parapets and the horizontal length of membrane installed. Any material specified to be applied up the face of the curb or parapet shall not be included in the measured quantity.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
516.0600.S	Sheet Membrane Waterproofing	SY

Payment is full compensation for furnishing and placing the primer, membrane, mastic, and hot rubberized asphalt sealer; and for preparing the surface.

stp-516-060 (20190618)

126. stp-516-061 Sheet Membrane Waterproofing for Top Slab Enter Structure #, Item 516.0610.S.

A Description

This special provision describes providing a primer, waterproofing membrane, hot rubberized sealer or mastic, or both, on the concrete top slab as the plans show.

B Materials

B.1 Waterproofing System

Provide a material in the waterproofing system that is specifically designed for use with an asphaltic concrete overlay. The membrane shall consist of a cold-applied, self-adhering membrane incorporating a heat resistant woven or non-woven fabric or fiberglass reinforcing laminated in between layers of polymer modified bitumen or SBS modified rubberized asphalt. The membrane shall have a release film, polyester or polyethylene on the down side and may have a thin spun bonded open weave polyester fabric on the up side that will bond with the asphaltic concrete overlay; yet will permit driving rubber-tired trucks, pavers and other construction vehicles on the membrane covered slab.

Provide a composite sheet membrane with the following properties:

Property	Test Method	Specific Value
Width		36 inch min.
Tensile Strength	ASTM D412	50 lb/inch or 700 psi min.
Thickness		60 mils to 80 mils
Puncture Resistance	ASTM E154	40 lb min.
Permeance	ASTM E96, Method B	0.05 US Perms max.
Low Temperature Pliability	ASTM D146, 1-inch Mandrel @ -25º F	No cracks or splits at 180º bend
Water Absorption	ASTM D570, 72 hours	0.25% max.
Peel Adhesion	ASTM D903	5 lb/in width min.
Compound Softening Point	ASTM D36	210º F ±20º F

Provide rubberized asphalt compound containing not more than 15% inorganic residue or filler material.

Provide primer, mastic and/or hot rubberized asphalt sealer conforming to the specified properties required by the manufacturer of the waterproofing membrane.

B.2 Materials Certification

Before membrane approval for initial submittals and/or upon reformulation of membrane material compounds, submit to the engineer a notarized certification by an independent test laboratory stating that the materials conform to the requirements of these specifications.

The certification shall include or have attached specific results of tests performed on the material supplied. The engineer may at his option require samples of any material for testing. Previously approved membranes will be provisionally accepted by manufacturer's certification on their company letterhead, but may be subject to control or approval, or both by subsequent testing.

C Construction

C.1 Application Methods

Apply materials in strict accordance to the manufacturer's instructions. In order to install the waterproofing membrane, the slab temperature shall be a minimum of 45º F and rising. Before applying the system, become acquainted with the materials specified and their handling characteristics and become thoroughly familiar with the construction procedures recommended by the manufacturer. Furnish a copy of the

recommended procedures to the engineer. To establish procedures for maintaining optimum working conditions and to coordinate work related to adjacent construction, hold a pre-installation conference with a manufacturer's representative, the engineer, and other affected contractors before starting construction. To provide quality assurance that the membrane has been properly installed, a manufacturer's representative familiar with membrane installation procedures shall be present during placement of the membrane.

Finish all concrete surfaces that will be in contact with the membrane with a magnesium float finish. Provide a minimum concrete cure time of seven days before placing the primer.

The slab shall be clean, dry, and free from mud, dirt, sand, oil, or grease, and any other contaminants before application of the primer. No vehicles or equipment will be permitted on the concrete slab after surface preparation except those necessary for the installation of the waterproofing membrane. The engineer will inspect the concrete slab before the application of the primer. Do not begin application of either the primer or membrane until after the engineer grants approval.

To coat all surfaces that will be covered with the membrane, apply primer uniformly as recommended by the manufacturer. Use roller, brush, or spray to apply primer to the surfaces. If spraying is used, an approved method of protecting the environment is required.

Allow the primer to dry until tack free, approximately 45 minutes, before applying the membrane. Apply primer only to an area that will be covered with the membrane within the same calendar day. If the surface of the concrete slab becomes contaminated, clean and re-prime the area.

Apply primer to the inside face of any header to the top of the header. Take care to ensure that all inside corners are coated with primer.

After the primer has dried to a tack free condition, apply one layer of membrane to the slab starting on the low side edge.

To form a bond with the primed slab, remove the release film from the membrane on the tacky side while the membrane is rolled face down. Apply the membrane using hand methods or by using mechanical applicators. Overlap a minimum of 2.5 inches at the edges of each strip and overlap the membrane in such a manner to provide a shingling effect toward the low side of the slab cross section. Overlap a minimum of 5 inches at the ends of each strip of membrane and overlap the membrane in such a manner to provide a shingling effect toward the lower side of the slab profile. Roll the entire membrane surface with a rubber tire roller to ensure firm and uniform contact with the primed surface. Use special care to ensure that the membrane is uniformly adhered to the concrete and that the entire membrane is free of wrinkles, air bubbles, and other placement defects. In the event bubbles or blisters do form under the membrane, puncture the bubbles or blisters with a sharp pointed instrument such as an awl and press the membrane firmly into contact with the slab. Repair any membrane punctures, tears, holes, and misaligned or inadequate seams with a patch of waterproofing membrane sized as required to ensure that the membrane is watertight.

Cover the inside corners of any concrete header and all other perimeter edges with narrow strips (flashing strips of approximately 12 inches), hot rubberized sealer, or mastic according to the manufacturer's guidelines. As an additional method of ensuring a watertight bond, all terminating edges, transverse overlaps and longitudinal overlaps may be heated with a propane torch to soften the top mat and fuse the surfaces together.

The applicator foreman or leadworker shall be certified by the manufacturer of the waterproofing membrane as approved applicators, and shall be present during all applications.

C.2 Where Overlaying the Membrane Directly with Asphaltic Concrete

Construct the asphaltic concrete overlay according to scheduling requirements elsewhere in the contract. Cover all of the exposed membrane with the specified asphaltic concrete mix within five days after installation. Only rubber-tired construction vehicles shall be permitted on the membrane. Use caution not to turn the tires when a vehicle is stationary. To prevent tearing the membrane, avoid sudden starts, stops, accelerations, or decelerations. Chemical solvents, gasoline, diesel fuel, mineral spirits, etc. or other deleterious substances shall not be spilled or leaked onto the membrane. Before covering the membrane with asphaltic concrete overlay, clean the membrane of mud, dirt, sand, oil, grease, or any other contaminants, and dry the membrane. Patch contaminated areas as required by the engineer. When required to accommodate traffic control staging, the construction of the asphaltic concrete overlay shall stay at least 6 inches away from the terminating edge of the membrane to provide for overlap.

The placement temperature of the asphaltic concrete shall be between 300º F and 350º F. Do not place asphaltic concrete on the membrane outside of this temperature range. The temperature of the

uncompacted mat of asphaltic concrete shall not fall below 280º F before rolling. The thickness of the asphaltic concrete layers shall be as the plans show; the initial layer shall have a minimum compacted thickness of 1 1/2 inches. The membrane applicator contractor shall have a minimum of one employee present during all asphaltic concrete paving operations to ensure that all necessary membrane repairs are accomplished.

C.3 Where Not Overlaying the Membrane Directly with Asphaltic Concrete

Place a 6-inch-thick layer of clean granular fill material (sand), free of any aggregate, stones or other angular materials that may puncture the membrane, over the membrane covered slab. Cover all exposed membrane with the clean granular fill within five days after installation. Only rubber-tired construction vehicles shall be permitted on the membrane. Use caution not to turn the tires when a vehicle is stationary. To prevent tearing the membrane, avoid sudden starts, stops, accelerations, or decelerations. Chemical solvents, gasoline, diesel fuel, mineral spirits, or other deleterious substances shall not be spilled or leaked onto the membrane. When required to accommodate traffic control staging, the placement of fill material shall stay at least 12 inches away from the terminating edge of the membrane to provide for overlap. The membrane applicator contractor shall have a minimum of one employee present during the placement of the clean granular fill material to ensure that all necessary membrane repairs are accomplished.

D Measurement

The department will measure Sheet Membrane Waterproofing for Top Slab Enter Structure #, installed according to the contract and accepted, in area by the square yard. Measurement shall be based on the horizontal distance between the faces of any concrete headers and the horizontal length of membrane installed. Any material specified to be applied up vertical faces of any header or vertically down at the ends of the slab shall be included in the measured quantity.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
516.0610.S	Sheet Membrane Waterproofing for Top Slab Enter Structure #	SY

Payment is full compensation for furnishing and placing the primer, membrane, mastic, and hot rubberized asphalt sealer; and preparing the surface. Clean granular fill material (sand), where required, will be paid for using the bid item Backfill Structure.

stp-516-061 (20190618)

127. stp-517-005 Structure Repainting General.

A General

A.1 Inspection

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

A.2 Date Painted

At the completion of all painting work, stencil in black paint or contrasting color paint the date of painting the bridge. The numbers shall be 3 inches (75 mm) in height and shall show the month and year in which the painting was completed: e.g., 11-95 (November 1995). On each bridge painted, stencil the date at two locations. On truss bridges, stencil the date on the cover plates of end posts near and above the top of the railings at the oncoming traffic end. On steel girder bridges, stencil the date on the inside of the outside stringers at the abutments. The date on grade separation bridges shall be readable when going under the structure or at some equally visible surface near the ends of the bridge, as designated by the engineer.

A.3 Graffiti Removal

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

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

B (Vacant)

C Construction

C.1 Repainting Methods

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

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

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

C.2 Inspection

Add the following to standard spec 105.9:

Furnish, erect and move scaffolding and other equipment to allow the inspector to closely observe all affected surfaces. The scaffolding, with appropriate safety devices, shall meet the approval of the engineer.

stp-517-005 (20150630)

517-010 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

For use on bridge rehabilitation contracts when preparation of top flanges on existing steel girders is required. If there is more than one structure, use supplemental.S numbers; for example, if the top flanges are being coated on B-14-100 and B-14-200, use 517.0900.S.01 for Structure B-14-100 and use 517.0900.S.02 for Structure B-14-200.

128. stp-517-010 Preparation and Coating of Top Flanges Enter Structure #, Item 517.0900.S.

A Description

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

B (Vacant)

C Construction

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

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

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

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

According to the approved project specific hazardous material containment plan, furnish and erect tarpaulins or other materials to collect all of the spent paint containing material resulting from blasting or hand and power tool cleaning and coating. Minimize dust during all clean-up activities. Collect and store waste material at the end of each work day or more often if needed. Store waste materials in the hazardous waste containers provided. Lock and secure all waste containers at the end of each work day. Cover containers at all times except when adding or removing waste material. Store the containers in an accessible and secured area, not located in a storm water runoff course, flood plain or exposed to standing water. Transportation and disposal of such waste material will be the responsibility of the department.

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

D Measurement

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

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT

517.0900.S Preparation and Coating of Top Flanges Enter Structure # LS

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

stp-517-010 (20140630)

If more than one structure, use supplemental.S numbers; for example, if repainting two structures, say B-14-100 and B-14-200, use 517.1000.S.01 for Structure B-14-100, and 517.1000.S.02 for Structure B-14-200.

129. stp-517-025 Structure Repainting Organic Zinc Rich System, Enter Structure #, Item 517.1000.S.

A Description

This special provision describes cleaning and painting the metal surfaces as described below according to the manufacturer's recommendations as modified in this special provision.

A.1 Areas to be Cleaned and Painted

1. Structure Enter Structure #, areas to be cleaned and painted; and if desired description of area being painted.
2. Structure Enter Structure #, areas to be cleaned and painted; and if desired description of area being painted.

B Materials

B.1 Coating System

Furnish a complete coating system from the department's approved product list. The color for the vinyl finish coating material described below shall follow Federal Standard 595. Before any coating is applied, supply the engineer with the product data sheets. The product data sheets shall indicate the mixing and thinning directions, the recommended spray nozzles and pressures, and the minimum drying time between coats.

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

These coatings are intended to be applied by spraying.

C Construction

C.1 Surface Preparation

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

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

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

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

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

C.2 Coating Application

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

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

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

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

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

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

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

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

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

Paint thickness shall be as follows:

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

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

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

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

D Measurement

The department will measure Structure Repainting Organic Zinc Rich System Enter Structure # as a single complete unit of work, completed according to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.1000.S	Structure Repainting Organic Zinc Rich System, Enter Structure #	LS

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

stp-517-025 (20190618)

517-036 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Under Section C.1 Surface Preparation, designer may choose to add language if special tools are required; for example, vacuum shrouded power tools. If working on more than one structure, use supplemental.S numbers; for example, if overcoating, cleaning and priming two structures, say B-25-100 and B-25-126, use 517.3000.S.01 for Structure B-25-100, and 517.3000.S.02 for Structure B-25-126. Contact the region Bridge Maintenance Engineer for assistance in identifying the scope of painting, including the areas requiring SP 2, SP 3, SP 11 and SP 15 cleaning.

130. stp-517-036 Structure Overcoating Cleaning and Priming Enter Structure #, Item 517.3000.S.

A Description

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

A.1 Areas to be Cleaned and Painted

Structure Enter Structure #

1. Two Coat Area: Enter the square footage SF with SP 1 cleaning.
2. Three Coat Area:

   Enter the square footage SF with SP 2 cleaning.

   Enter the square footage SF with SP 3 cleaning.

   Enter the square footage SF with SP 11 cleaning.

   Enter the square footage SF with SP 15 cleaning.

   Enter the square footage SF total three-coat area.

B Materials

Furnish an epoxy coating system from the department's APL for Paint- structure maintenance.

C Construction

C.1 Surface Preparation

Before overcoating or ***Select from drop-down.*** tool cleaning, solvent clean all surfaces to be coated according to SSPC-SP1. A SSPC-SP ***Select from drop-down.*** ***Select from drop-down.***Tool Cleaning according to Steel Structures Painting Council Specification ***Select from drop-down.*** will be required on all metal surfaces to be painted with a three-coat system. Prime the same day, or re-clean before application, all metal surfaces receiving a No. ***Select from drop-down.*** cleaning.

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

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

C.2 Painting

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

C.3 Coating Application

Apply paint in a neat, workmanlike manner. The resultant paint film shall be smooth and uniform without skips or areas of excessive paint. Apply coating according to the manufacturer's recommendations.

Before applying the prime coat, coat with primer all edges, rivet and bolt heads, nuts and washers by using either a brush, roller, or spray application.

Dry Film Thickness per coat shall be a minimum of 3-mil. The dry film thickness shall be determined by use of a magnetic film thickness gage. The gage shall be calibrated for dry film thickness measurement according to SSPC-PA 2.

During surface preparation and coating application, the ambient and steel temperature shall be between 39 and 100 degrees F. The steel temperature shall be at least 5 degrees F above the dew point temperature, and the relative humidity shall not exceed 85%.

D Measurement

The department will measure Structure Overcoating Cleaning and Priming Enter Structure #, completed in accordance with the contract and accepted, as a single complete unit of work.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.3000.S	Structure Overcoating Cleaning and Priming Enter Structure #	LS

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

stp-517-036 (20181119)

Use for hand-tool spot removal projects, where less than 55 gallons of paint waste will be generated. Use a separate bid item and supplemental description for each structure.

131. stp-517-037 Containment and Collection of Waste Materials Enter Structure #, Item 517.4000.S.

A Description

This special provision describes furnishing and erecting tarpaulins to contain, collect and store the spent material from surface preparation of steel surfaces, collecting such spent material, and labeling and storing the spent material in waste containers.

B Materials

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

C Construction

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

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

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

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

D Measurement

The department will measure Containment and Collection of Waste Materials Enter Structure #, completed according to the contract and accepted, as a single complete unit of work for each structure designated in the contract.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.4000.S	Containment and Collection of Waste Materials Enter Structure #	LS

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

stp-517-037 (20080902)

517-043 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use the two-coat polysiloxane paint system for steel box girders only. Use the three-coat epoxy paint system for steel I-girders.

132. stp-517-043 Painting Polysiloxane System EnterSstructure #, Item 517.0650.S.

A Description

This special provision describes structural steel girder surface preparation, shop application of the two-coat polysiloxane system, and incidental field painting and repairs.

Conform to standard spec 517 as modified in this special provision.

B Materials

Furnish a coating system from the department's approved product list consisting of an organic zinc rich epoxy prime coat conforming to standard spec 517.2 and a finish coat of polysiloxane. Furnish polysiloxane having a resin co-reacted or blended with acrylic, epoxy, or urethane resin, or combination thereof, supplied by the primer manufacturer. Ensure that polysiloxane does not contain isocynates or polyisocynates.

For box girders, ensure that the finshed coating matches the Federal Standard 595 color the plans show for exterior surfaces, diaphragms, and bracing and matches Federal Standard 595 color, white #27925, for interior surfaces, diaphragms, and bracing. The contractor may use the first two coats of a three-coat epoxy paint system from the department's approved product list conforming to standard spec 517.2.4 on the interior of box girders. If using the epoxy system, cover box girders in storage or after erection if the interior is exposed to sunlight for more than 30 days.

C Construction

Remove all visually evident steel defects by conditioning according to ASTM A6 before blast cleaning. When material defects exposed by blast cleaning are removed, restore the blast profile by either blast cleaning or using mechanical tools according to SSPC-SP11. Mill or grind flame cut edges, so the lines are parallel to the length of the plate edge. Grind exterior corners to a 3/32" radius.

Submit product data sheets to the engineer before coating. Ensure that product data sheets include mixing and thinning directions, recommended spray nozzles and pressures, and minimum drying times for shop or field applied coats. Also provide manufacturer recommended application temperatures; recoating procedures; and coating procedures for galvanized bolts, nuts and washers.

Except for incidental field finish work, including bolted field splices and repair of damaged areas, shop apply the polysiloxane system coatings at the following dry film thicknesses measured according to SPCC PA 2:

Organic zinc rich epoxy primer.....4 mils min
Polysiloxane finish coat.....4 to 8 mils
Total paint system.....8 to 13 mils

Apply organic zinc rich epoxy primer conforming to standard spec 517.3, except ensure that the dry film thickness on faying surfaces of bolted field splices is not less than 2 mils or greater than 2.5 mils. Mask faying surfaces during finish coat application.

Do not apply polysiloxane if the ambient air or steel surface is below manufacturer-recommended application temperature minimums or below 39 F, whichever is higher.

If the contractor elects to use the first two coats of the three coat epoxy system on the interior of box girders, conform to standard spec 517.3

On the interior of box girders, uniformly dust the wet film surface of the first interior coat on the top of the bottom flange with silica sand or other engineer-approved grit material. Blow off any loose, non-adhered sand or grit before applying the second interior coat.

For maximum time between coats of the polysiloxane system, adhere to manufacturer recommendations except as follows:

- Let no more than 60 days elapse between coats.
- The engineer will allow additional time to apply the polysiloxane finish coat in the field for incidental painting or damage repairs.

After delivery to the project site and before erecting the girders, visually inspect the girders and remove dust, dirt, road salts and other contaminants from the surfaces of the girders. Use a low-pressure water blast or other engineer-approved method to remove all visually identifiable contaminants without damaging shop-applied paint.

Take care to minimize the number and size of touch-up spots. Follow the manufacturer's recommendations for repairing damaged areas.

Protect property near the structure from over-spray during field painting and repair damaged areas conforming to standard spec 517.3.1.8. Before applying the polysiloxane field coating, clean all primed surfaces and areas to be re-coated with a light water blast and prepare surfaces as the manufacturer recommends. Before painting, obtain engineer approval for surface cleaning and coating procedures.

D Measurement

The department will measure Painting Polysiloxane System as a single lump sum unit of work for each structure, acceptably completed. The engineer will accept the work based on the final field appearance.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.0650.S	Painting Polysiloxane System (structure)	LS

Payment is full compensation for surface preparation and painting; for incidental field painting and repairs; and for substituting epoxy for polysiloxane as allowed inside box girders.

stp-517-043 (20190618)

517-045 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Existing structure is painted with vinyl, not for new steel.

133. stp-517-045 Painting Vinyl System Enter Structure #, Item 517.0700.S.

A Description

This special provision describes painting structures with a vinyl system conforming to standard spec 517 as modified in this special provision.

B Materials

B.1 Coating Systems

Furnish a complete coating system from the department's approved product list. Use a tinted white intermediate vinyl coating material. The color for the vinyl finish coating material shall match the color number the plans show according to Federal Standard Number 595. Supply the engineer with the product data sheets before any coating is applied. The product data sheets shall indicate the mixing and thinning directions, the recommended spray nozzles and pressures, the minimum drying time for shop applied coats, and the recommended procedures for coating galvanized bolts, nuts, and washers.

C (Vacant)

D Measurement

The department will measure Painting Vinyl System Enter Structure # as a single complete unit of work for each structure designated in the contract and completed according to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.0700.S	Painting Vinyl System Enter Structure #	LS

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

stp-517-045 (20190618)

Use for blast cleaning with painting. Any abrasive blast cleaning requires full containment, so 517-055 and 517-060 must be used with this STSP. Use a separate bid item and supplemental description for each structure.

134. stp-517-050 Structure Repainting Recycled Abrasive Enter Structure #, Item 517.1800.S.

A Description

This special provision describes surface preparation and painting of the metal surfaces according to the manufacturer's recommendations as modified in this special provision.

A.1 Areas to be Cleaned and Painted

All structural metal surfaces of:

1. Structure Enter Structure # Enter the square footage SF.

Areas are approximate and given for informational purposes only.

B Materials

B.1 Coating System

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

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

C Construction

C.1 Surface Preparation

Before blast cleaning, solvent clean all surfaces to be coated according to SSPC-SP1.

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

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

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

The steel grit and any associated equipment brought to the site and used for blast cleaning shall be clean. Remove immediately dirty grit or equipment brought to the site at no expense to the department. Furnish an abrasive that has a gradation such that it will produce a uniform surface profile between 1 to 3 mils on the steel surface, as measured in accordance with ISO 8503-5.

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

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

Remove all spent material and paint residue from steel surfaces with a good commercial grade vacuum cleaner equipped with a brush-type cleaning tool, and test cleanliness in accordance with ASTM D4285.

The airline used for surface preparation shall have an in-line water trap and the air shall be free of oil and water as it leaves the airline.

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

C.2 Coating Application

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

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

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

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

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

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

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

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

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

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

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

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

D Measurement

The department will measure Structure Repainting Recycled Abrasive Enter Structure # as a single complete lump sum unit of work, completed according to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.1800.S	Structure Repainting Recycled Abrasive Enter Structure #	LS

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

stp-517-050 (20190618)

Use for any project where more than 55 gallons of paint waste will be generated. This STSP is typically used with 517-060 and 517-065. The EPA ID number is site/structure specific, so if this STSP covers more than one structure, enter multiple structures and ID numbers in the required fields.

135. stp-517-055 Labeling and Disposal of Waste Material.

The EPA ID number for Structure Enter Structure # is Enter EPA ID #.

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

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

Contact the waste management contractor a minimum of 10 working days in advance to request container drop-off or pickup. Provide the waste management contractor with the project ID, structure number, EPA ID, and the agreed-upon location for container staging. Contact information for the waste management contractor is located on the WisDOT Internet site at https://wisconsindot.gov/Documents/doing-bus/eng-consultants/cnslt-rsrces/environment/hazwaste-contacts.pdf

Report all reportable spills and discharges according to the contingency plan.

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

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

stp-517-055 (20190618)

HAZARDOUS WASTE

WW-5257580999-001-01-0

STORAGE LABEL

RQ, HAZARDOUS WASTE, SOLID, n.o.s.,

(LEAD), 9, NA3077, III, (D008)

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

EPA CODE: E/D008 STATE: S

WIP#: 391498

WIP DESC: BRIDGE SAND WITH LEAD

DATE ACCUMULATED: 07/01/2005

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

WISC DOT BRIDGE # B-29-53/54

I-94 OVER CTH H

PROJECT ID # 5882-03-70

CAMP DOUGLAS, WI 54618 (608) 963-0871

GENERATOR EPA ID

WIR000121103

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

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

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

517-060 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use for bridge repainting projects to provide the contractor a place to remove contaminated PPE, wash, and change into clean clothes. This STSP is typically used with 517-055 and 517-065.

136. stp-517-060 Portable Decontamination Facility, Item 517.6001.S.

A Description

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

B Materials

Supply and operate all equipment in accordance with OSHA.

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

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

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

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

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

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

C Construction

Properly contain, store, and dispose of the wastewater.

D Measurement

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

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.6001.S	Portable Decontamination Facility	EACH

Payment is full compensation for furnishing and maintaining a portable decontamination facility.

stp-517-060 (20140630)

137. stp-517-065 Negative Pressure Containment and Collection of Waste Materials, Enter Structure #, Item 517.4500.S.

A Description

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

B (Vacant)

C Construction

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

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

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

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

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

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

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

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

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

Collect and store at the bridge site for disposal all waste material or scum collected by this operation, or any that may have fallen onto the ground tarps. Collect and store all waste material and scum at the end of each workday or more often if needed. Storage shall be in provided hazardous waste containers. Label each container as it is filled, using the labels provided by the Hazardous Waste Disposal contractor. Check the label and ensure that the project ID, bridge number and EPA ID match the structure. Fill in the generation date when the first material is placed in the container. Secure all containers at the end of each workday.

Keep the containers covered at all times except to add or remove waste material. Store the containers in an accessible and secured area, not located in a storm water runoff course, flood plain, or exposed to standing water.

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

D Measurement

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

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.4500.S	Negative Pressure Containment and Collection of Waste Materials Enter Structure #	LS

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

stp-517-065 (20140630)

The warranty bond $ amount is 60 percent of the sum of the estimated contract amounts for cleaning and coating the existing structure.

138. stp-517-070 Painting Warranted Enter Structure #, Item 517.2000.S.

A Description

This special provision describes providing a two-year bond warranting the cleaning and coating of structure Enter Structure # as previously performed and completed under project Enter project id # together with corrective work to the coating ordered during the warranty period.

Unconditionally warrant the coating system applied to the bridge to be free of defects, as defined and determined by visual inspection and paint thickness measurements, for a period of two calendar years from the date of conditional final acceptance of project Enter project id # by the engineer.

The coating system will be considered defective if any of the following conditions are discovered within the two-year warranty period:

1. The occurrence of visible rust or rust breakthrough, paint blistering, peeling, scaling, or unremoved slivers.
2. Coating applied over dirt, debris, blasting debris, or rust products not removed during blast cleaning.
3. Incomplete coating or coating thicknesses less than the minimum specified in the painting specifications.
4. Damage to the coating system caused by the contractor while removing scaffolding or performing other work.

B Warranty

Upon completion of the work and conditional final acceptance of project Enter project #, the combination of the contract bond with the necessary warranty bonds for the project will be in effect for the total two-year warranty period. The bonding company is required to have an A.M. Best rating of "A-" or better and the contractor shall provide proof of a two year warranty bond commitment before execution of the contract.

Warranty bonds will be $Enter dollar amount for the warranted structure painting The bond shall secure performance by the contractor of corrective work on any coating system defects that the contractor is directed by the department to perform and shall be in force for the period covering the two-year warranty and the time required to perform any corrective work covered by the warranty.

Warranty bonds will be one of the following:

1. A single term two year warranty bond that will be in effect for the entire warranty period.
2. Acknowledgment that the duration of the contract bond for the project will remain in effect for a period of one year beyond the completion of the project and will include warranty work as described in section C. Warranty bonds extending beyond that period will be supplied by the contractor. The contractor will provide a one year warranty bond.

During the month before the end of the two-year warranty period, or earlier, the engineer will inspect the bridge thoroughly for the coating system defects listed. Department personnel using department equipment will do this inspection. The contractor will be notified of the inspection and may accompany the engineer during this inspection. The engineer will determine if there are defective areas present as defined above and mark the limits of defective areas found. The engineer will notify the contractor within 30 days the result of the inspection.

Acceptance by the engineer of any portion of the work during the original contract will not relieve the contractor of the requirements of this warranty.

At the end of the warranty period, the contractor will be released from further warranty work or responsibility, provided all previous warranty work has been completed.

C Corrective Work

According to the original contract painting specifications, correct all defective areas identified by the engineer. Submit the corrective procedures and progress schedule in writing to the engineer for review and approval before any work. All corrective work shall be done the same season as the inspection, unless the seasonal limitations stated in the painting specifications prevent completing the corrective work that season, in which case the corrective work shall be completed the following season. The engineer shall be given at least two weeks notification before the contractor begins the corrective work and shall be allowed full inspection of all operations and provided safe access to the areas being repaired.

Provide a certificate of insurance indicating that the required liability insurance coverage, specified in standard spec 107.26, is in effect for the period the corrective work is being done.

When completing any identified corrective work, use proper containment procedures and maintain traffic as described in the contract documents.

D Measurement

The department will measure Painting Warranted Enter Structure # as a single lump sum unit for each structure, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.2000.S	Painting Warranted Enter Structure #	LS

Payment is full compensation for all costs associated with performance of the warranted work; for the warranty, warranty bonds, the quality control plan, the required maintaining traffic, and for the required supplemental performance and lien bonds.

stp-517-070 (20140630)

139. stp-517-110 Concrete Staining Enter Structure #, Item 517.1010.S.

A Description

This special provision describes providing a two coat concrete stain on the exposed concrete surfaces of structures as the plans show.

B Materials

B.1 Mortar

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

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

The mortar shall contain one of the following acrylic bonding admixtures mixed and applied according to manufacturer's recommendations:

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

B.2 Concrete Stain

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

Tri-Sheen Concrete Surfacer, Smooth by TK Products

Tri-Sheen Acrylic by TK Products

TK-1450 Natural Look Urethane Anti-Graffiti Primers by TK Products

Safe-Cure & Seal EPX by Chem Masters

H&C Concrete Stain Solid Color Water Based by Sherwin-Williams

C Construction

C.1 General

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

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

C.2 Preparation of Concrete Surfaces

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

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

C.3 Staining Concrete Surfaces

Apply the concrete stain according to the manufacturer's recommendations.

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

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

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

C.4 Test Areas

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

C.5 Surfaces to be Coated.

Apply concrete stain to the surfaces according to the plan.

D Measurement

The department will measure Concrete Staining Enter Structure # in area by the square foot of surface, acceptably prepared and stained.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.1010.S	Concrete Staining Enter Structure #	SF

Payment is full compensation for furnishing and applying the two coat system; for preparing the concrete surface; and for preparing the sample panels.

stp-517-110 (20140630)

140. stp-517-115 Concrete Staining Multi-Color Enter Structure#, Item 517.1015.S.

A Description

This special provision describes providing a multi-color concrete stain on the exposed concrete surfaces of the structure as the plan details show.

B Materials

B.1 Mortar

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

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

The mortar shall contain one of the following acrylic bonding admixtures mixed and applied according to manufacturer's recommendations:

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

B.2 Concrete Stain

Use concrete stain manufactured for use on exterior concrete surfaces. Use the following products, or equal as approved by the department:

Tri-Sheen Concrete Surfacer, Smooth by TK Products

Tri-Sheen Acrylic by TK Products

TK-1450 Natural Look Urethane Anti-Graffiti Primers by TK Products

Safe-Cure & Seal EPX by Chem Masters

H&C Concrete Stain Solid Color Water Based by Sherwin-Williams

C Construction

C.1 General

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

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

C.2 Preparation of Concrete Surfaces

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

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

C.3 Staining Concrete Surfaces

Apply the concrete stain according to the manufacturer's recommendations.

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

The color of the staining shall produce a multi-color effect that consists of multiple colors replicating varying natural stone coloration. Stain the joints between stones produced by the form liner to create the appearance of grouted joints.

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

C.4 Test Areas

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

C.5 Surfaces to be Coated.

Apply concrete stain to the surfaces according to the plan.

D Measurement

The department will measure Concrete Staining Multi-Color Enter Structure # in area by the square foot of surface, acceptably prepared and stained.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.1015.S	Concrete Staining Multi-Color Enter Structure #	SF

Payment is full compensation for furnishing and applying the coloring system; for preparing the concrete surface; and for constructing and staining the sample panels.

stp-517-115 (20140630)

141. stp-517-150 Architectural Surface Treatment Enter Structure #, Item 517.1050.S.

A Description

This special provision describes providing a concrete masonry architectural surface treatment on the exposed concrete surfaces of structures as the plan details show.

B Materials

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

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

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

C Construction

C.1 Equipment

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

C.2 Form Liner Preparation

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

Apply form release per manufacturer's recommendations.

C.3 Form Liner Attachment

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

C.4 Surface Finishing

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

Grind or fill pouring blemishes.

D Measurement

The department will measure Architectural Surface Treatment Enter Structure # in area by the square foot of architectural surface, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.1050.S	Architectural Surface Treatment Enter Structure #	SF

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

stp-517-150 (20110615)

520-015 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

This STSP is only intended to be used for circular culverts. The STSP should not be used on culverts that are:

1. ***Located in a mapped floodplain unless culvert with liner is modeled to show upstream water surface elevation is not increased when compared to the existing culvert.***
2. ***Located in drainage districts unless the drainage board approves the installation of the liner.***
3. ***Located on a stream where aquatic organism passage is a concern unless WDNR is in agreement with the use of a liner.***
4. ***Crushed, collapsed, or have excessive deflection that may make liner installation impossible.***
5. ***Horizontal elliptical or arch pipes.***
6. ***Previously lined.***

Plans must include characteristics of the existing culvert including material of construction, diameter and pipe slope. Because of variation in liner size, do not show proposed liner diameters on the plans unless it is required to meet special hydraulic conditions such as maintaining a critical water surface elevation. Field verify culvert material of construction, size, shape and condition during design. Include a sufficient quantity under the Cleaning Culvert Pipes for Liner Verification bid item for the construction staff to confirm required liner dimensions before ordering material. Typically the bid item is not needed for every liner but only for those likely to be under water or otherwise obscured by sediment or debris.

When specifying liners for concrete pipe, designers should verify the hydraulic requirements of this special provision can be met.

Perform a complete culvert hydraulic analysis on culverts to be lined that have hydraulically sensitive structures and/or property upstream and in low cover areas where over topping may be a concern.

Section C.1 which states "Obtain easements if necessary for installing long sections of pipe" is NOT intended to relieve the designer of the responsibility of determining and securing the easements necessary to carry out culvert lining operations. Right of way for construction staging and operations should generally be secured in the form of Temporary Limited Easements before letting. Reliance on Construction Permits should be avoided. Section C.1 is intended to require the contractor to secure additional easements for unanticipated means and methods employed. On at least one end of the culvert, provide a minimum work area 45 feet long emanating on alignment with the end of pipe and 30-40 feet wide, with adequate access and limited obstructions. It is preferable that this area is available at both ends of the pipe to allow push or pull operations. Alternately a smaller work area of at least 10 feet x 10 feet should be available on the opposing end of the culvert.

142. stp-520-015 Culvert Pipe Liners, Enter Size-Inch, Item 520.9700.S; Cleaning Culvert Pipes for Liner Verification, Item 520.9750.S.

A Description

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

B Materials

B.1 General

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

B.2 Flexible Pipe Liner

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

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

B.3 Grout

B.3.1 Cement

Furnish cement meeting the requirements of standard specification 501.2.1 for Type I or II Portland Cement.

B.3.2 Fly Ash

Furnish Class C or F Fly Ash meeting the requirements of standard specification 501.2.6.

B.3.3 Sand

Furnish natural sand meeting the fine aggregate requirements of standard specification 501.2.5.3. In addition to the size requirements of standard specification 501.2.5.3.4 the percent passing of the number 200 sieve shall be 0-5 percent passing by weight.

B.3.4 Water

Furnish water meeting the requirements of standard specification 501.2.4.

B.3.5 Mix Design

Use the basic proportions of dry materials per cubic yard of grout as follows:

- Cement 100 pounds
- Fly Ash 400 pounds
- Fine Aggregate 2600 pounds

Air entraining and chemical admixtures to control fluidity of the grout are allowable. Ten days before placement, furnish to the engineer a design mix detailing all components and their proportions in the mix.

B.8.6 Fluidity

Measure the fluidity of the grout per ASTM C939. Prior to filling the flow cone with flowable mortar, pass the mixture through a 1/4-inch screen. Use an efflux time of 10 seconds to 16 seconds. Measure in the presence of the engineer prior to placement and at least once every 4 working hours until work is complete.

B.8.7 Cellular Grout

Alternatively, the contractor may use, or if the manufacturer recommends, an engineer-approved commercial cellular concrete grout conforming to the following:

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

C Construction

C.1 General

As soon as possible after contract execution, survey existing culvert pipes to determine which culverts need cleaning in order to verify the required liner diameter and length. Notify the engineer before cleaning to confirm payment under the Cleaning Culvert Pipes for Liner Verification bid item.

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

Obtain easements if necessary for installing long sections of pipe.

C.2 Excavating and Cleaning

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

C.3 Placing Liners

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

Install liners such that the alignment and invert lie true to the lines, grades, and elevations in the plan. In absence of plan details, install liners horizontally to provide even annular space between the host pipe and sides of the liner. Install liners vertically with the invert as close to the host pipe invert as possible.

Obtain additional easements, if necessary, for installing long sections of liner.

Connect joints and install the liner per the manufacturer's recommendations and this part.

C.4 Pressure Grouting

Furnish a written plan for grouting the annular space between the host pipe and culvert pipe liner to the engineer for acceptance. Furnish the grouting plan prior to or at the project preconstruction conference so that it can be reviewed and discussed. At a minimum, the grouting plan shall consist of the following:

- Intended grout mix(es)
- Testing methods and frequency
- Pumping equipment and pressure regulation
- Intended grout staging
- Grout monitoring
- Bracing/floatation control

Include a description of staging in the grouting plan. Based on the length and slope of the host culvert, multiple stages may be required to minimize external loads on the culvert pipe liner. Develop the staging plan with the manufacturer based on the recommended maximum loading for the culvert pipe liner and the condition of the host culvert. Unless approved by the manufacturer, in no case shall a single lift of grout exceed 1/3rd the pipe external diameter at any point in the pour.

After the liner is in place, fill the area between the original culvert and the liner completely with grout per the accepted grouting plan. Block, grout in lifts, or otherwise secure liners to prevent floatation or deformation of the liner while grouting. Grout ports can be fabricated to allow placement of anti-floatation bracing or spacers.

Use a grout plant that is capable of accurately measuring, proportioning, mixing, and discharging by volume and at discharge pressures the liner manufacturer recommends. Do not exceed manufacturer-specified maximum pressures. Place grout in lifts to prevent exceeding maximum allowable pressures and to prevent flotation.

Use grout and witness ports to vent grouting and monitoring grouting progress. Plug ports as necessary as grout reaches them.

Do not remove any bracing inside of the liner until the grouting process is complete.

C.5 Assembly, Floatation, and Deflection Mitigation

Damage or misalignment due to assembly, floatation or deformation during grouting, or otherwise resulting from workmanship will be mitigated at the contractor's expense.

C.6 Site Restoration

Replace pipe sections damaged or collapsed during installation or grouting operations. Restore the grade to its original or improved cross section. Dispose of waste material.

D Measurement

The department will measure the Culvert Pipe Liners bid items by the linear foot measured in place for each culvert location, acceptably completed.

The department will measure Cleaning Culvert Pipes for Liner Verification as each culvert, acceptably cleaned. The department will only measure culverts the engineer approves for payment.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
520.9700.S	Culvert Pipe Liners Enter Size	LF
520.9750.S	Cleaning Culvert Pipes for Liner Verification	EACH

Payment for the Culvert Pipe Liners bid items is full compensation for providing pipe liners; obtaining easements; for excavation and pumping; for cleaning the existing pipe before liner installation; for pressure grouting; for replacing contractor-damaged pipe and endwalls; and for restoring the grade and disposing of waste materials.

The department will pay the contractor $150 per cubic yard for grout required in excess of 110 percent of the theoretical quantity required to fill the space between the inside diameter of the existing pipe and the outside diameter of the liner.

Payment for Cleaning Culvert Pipes for Liner Verification is full compensation for cleaning required to verify liner length and diameter; for excavation and pumping; and for disposing of waste material.

The department will pay separately for replacing unserviceable endwalls not rendered unserviceable by contractor operations under the appropriate contract endwall bid item, or absent the appropriate item as extra work.

stp-520-015 (20180628)

143. stp-521-005 Surface Drain Pipe Corrugated Metal Slotted, Enter Size-Inch, Item 521.2005.S.

A Description

This special provision describes furnishing and installing slotted corrugated metal pipe surface drain as the plans show.

Conform to standard spec 521 as modified in this special provision.

B Materials

Furnish backfill material that is grade A, A-FA, A-S, A-T, A-IS, A-IP, or A-IT concrete conforming to standard spec 501.2 as modified in standard spec 716. Provide QMP for class III ancillary concrete as specified in standard spec 716.

C Construction

Before backfilling, plug the upper end of the slotted drain as the plans show or as approved by the engineer.

Before backfill operations adjacent to the slotted area of the slotted corrugated metal pipe surface drain pipe, install timber blocks in the slots according to the plan details. Remove any material entering the pipe at no expense to the department.

Keep the timber blocks in place until final cleanup operations are completed; at which time, remove the timber blocks.

Exercise care to avoid damage to the slotted corrugated metal pipe surface drain pipe. If any section of pipe is damaged or is unsatisfactory as determined by the engineer, replace the drain pipe at no expense to the department.

D Measurement

The department will measure Surface Drain Pipe Corrugated Metal Slotted, Enter Size-Inch, completed according to the contract and accepted, in place by the linear foot.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
521.2005.S	Surface Drain Pipe Corrugated Metal Slotted, Enter Size-Inch	LF

Payment is full compensation for furnishing all materials; hauling and placing the pipe, including bands; making connections to existing inlets; furnishing concrete, end plug or cap; and for cleaning out and restoring site of work.

stp-521-005 (20150630)

144. stp-531-005 Noise Barriers Single-Sided Sound Absorptive Enter Structure #, Item 531.0200.S.

A Description

This special provision describes designing, fabricating, transporting, and erecting composite concrete single-sided sound absorptive noise barriers as the plans show and conforming to department-approved installation specifications.

B Noise Wall System

B.1 System Pre-Qualification and Selection

The noise wall system supplied must be pre-qualified by the department. The department maintains a list of pre-qualified systems which can be viewed online at:

https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/tools/appr-prod/default.aspx

Systems eligible for use on this project shall be pre-qualified before the award of this contract.

Provide the name of the selected system, and the intended fabricator to the engineer within 25 days after award of the contract. Schedule a pre-design meeting with the engineer subsequent to award of the contract and before beginning design of the noise barrier. A representative of the fabricator of the noise barrier components shall attend this meeting.

B.2 Design

B.2.1 Structural and Foundation Design

The structural and foundation design of the noise barrier system shall conform to the current edition of "AASHTO LRFD Bridge Design Specifications" published by the American Association of State Highway and Transportation Officials (AASHTO), 444 North Capitol Street, NW, Suite 225, Washington, DC 20001, with the following exceptions:

The minimum design wind pressure shall be 35 pounds per square foot (Strength III) for ground mounted noise barriers and 40 pounds per square foot (Strength III) for structure mounted noise barriers, unless specified otherwise on the plans. For ground and structure mounted noise barriers, the minimum Service I design wind pressure shall be 15 pounds per square foot. All wind loads shall be applied perpendicular to the barrier, alternately in each direction.

Design drilled shaft foundations using the Broms Method. Ignore the top 1foot of supporting soil in the design of ground-mounted barrier foundations.

In addition to wind loads, design the bottom noise barrier panel to support the dead load (weight) of the panels directly above it and its own dead load. Assume this dead load to be distributed uniformly across the bottom panel acting as a simple beam supported at the posts.

Bottom noise barrier panels shall have a minimum amount of perimeter reinforcement of a #4 bar which shall be continuous around the corners. Reinforcing steel in the concrete core of noise barrier panels shall have a minimum clear cover of 1 inch. Clear cover does not include sound absorptive material. Design the reinforced concrete core to resist the loads without considering any composite action from other material in the panel.

Provide a neoprene bearing pad or equivalent material of 1/4 inch minimum thickness between the foundation and the bottom panels. The allowable bearing stress shall not exceed 900 psi. Precast concrete pedestals placed between the foundation and bottom panels shall be reinforced if over 1’-0" high. The bearing pads shall be preformed EPDM rubber conforming to ASTM D-2000, Grade 2, Type A, Class A with a minimum Durometer Hardness of 80.

B.2.2 Fire Hose Access Openings

Design fire hose access openings, at locations the plans show, with additional reinforcement and clear cover around the opening as necessary to maintain structural integrity. Detail drawings shall show the additional reinforcement and method for attaching the Fire Hydrant Location Signs to the barrier panel.

B.2.3 Barrier Profile

Unless the plans show or engineer approves otherwise, design the top of the noise barrier to be horizontal and at or above the acoustic elevation line the plans show. The bottom elevation of the noise

barrier shall be as the plans show. Changes in elevation shall be accomplished by stepping sections at posts. Steps shall not exceed 3-feet in height. All joints shall be horizontal or vertical and shall be aligned with the adjacent panels.

B.2.4 Panel Orientation

Design the panels to prevent entrapment and ponding of water. Avoid inadvertently providing areas for perching, nesting of birds or collecting of dirt and debris in the design of the noise barrier system.

B.2.5 Sound Transmission Loss (TL)

Design the noise barrier panel material to achieve a transmission loss equal to or greater than 20 decibels in all test frequency bands, as referenced in ASTM E90.

B.2.6 Noise Reduction Coefficient (NRC)

Design the noise barrier system so that the highway sides of the noise barrier panels have a minimum NRC of 0.80, as referenced in ASTM C423.

B.2.7 Design Coordination

Design the noise barrier post spacing so as not to interfere with the existing utility and drainage facilities.

Design the noise barrier post spacing so as not to interfere with proposed utility and drainage facilities the plans show. This includes proposed roadway lighting and ITS facilities.

For noise barriers mounted behind or near proposed retaining walls, coordinate and design the noise barrier post spacing so as to not interfere with embedded portion of the proposed retaining walls, including MSE wall soil reinforcement and tieback anchors on soldier pile and timber lagging retaining walls.

For noise barriers mounted on proposed bridges and retaining walls, coordinate and design the noise barrier post spacing to coincide with noise barrier post and embedded noise barrier anchor assembly spacing the bridge and retaining wall plans show. Coordinate any required changes to the noise barrier post spacing and embedded noise barrier anchor assembly locations the bridge and retaining wall plans show, if required for the design of the noise barrier.

Insert Table of Structure and Retaining Wall Mounted Noise Barrier if applicable

B.2.8 Weep Hole Openings

Design panels such that weep hole openings in noise wall to allow water to drain can be field installed per C.3 at locations the plans show.

B.2.9 Maintenance Doors

Design maintenance doors and door portals in noise walls, at locations the plans show, with additional reinforcement and clear cover around the opening as necessary to maintain structural integrity per B.2.1.

B.3 Materials

Required material certifications and testing are the responsibility of the contractor. All certifications and test reports shall carry the name and address of the fabrication facility where the specific material was produced.

B.3.1 Concrete Masonry

Provide grade A, A-2, A-FA, A-S, A-T, A-IS, A-IP, or A-IT concrete conforming to standard spec 501 as modified in standard spec 716 for concrete posts and the core component of composite concrete sound absorbing panels. Provide QMP for class II ancillary concrete as specified in standard spec 716.

B.3.2 Materials Testing – General

All test reports shall carry the name and address of the laboratory where testing was performed, and the name of the person in responsible charge of the specific tests for which data is presented. Materials tested shall be representative of materials manufactured for this specific contract. Panels tested or from which samples will be taken will be selected and appropriately marked by the engineer either at the manufacturer's plant or from panels delivered to the project at the engineer's option.

Testing as detailed below is required for each lot of material not to exceed 100,000 SF of noise barrier produced. Conduct testing on panels within the first 30,000 SF of production of each lot not exceeding 100,000 SF. For projects that do not exceed 100,000 SF, a minimum of two lots of material will represent the project, each lot representing equivalent square footage. The first set of tests conducted for projects

that do not exceed 100,000 SF shall be within the first third of the total square footage of the project. Provide the shipping record of the samples to the laboratory within five days of sampling. Begin testing as soon as practicable after sampling.

Test all materials as fabricated, including any specified finishing.

B.3.2.1 Noise Reduction Coefficient (NRC)

Test noise barrier panels in accordance with ASTM C423, and placed in accordance with ASTM E795, mounting type A, to determine the noise reduction coefficient (NRC) of the material. Submit to the engineer an independent laboratory test report that shows that the noise barrier panels achieve an NRC as specified in B.2.6 for the highway side of the barrier.

B.3.2.2 Long-term Durability

Test all sound absorbing composite concrete and composite concrete components for long-term durability in accordance with ASTM C672 and the following modifications and/or requirements:

B.3.2.2.1 Test Specimens

Three specimens of a full cross section of the composite panel at least 144 square inches in face area will be selected at random from the provided composite panel as defined in B.3. Sample specimens shall be representative of the manufacturer's continuous production operation, as selected and marked by the engineer. Specimens shall be 2D-symmetric and shaped according to the testing laboratory's accommodations.

Prepare the surfaces of the sample specimens for testing as follows. Brush the surfaces of the sample to remove any loose particles. Before testing, submerge the test specimens be submerged in water for a period of 24 hours before testing. Immediately following this, cover the specimens with the sodium chloride solution as stated below.

B.3.2.2.2 Test Procedure

Place samples in a 5 sided water tight container, fully submerged in a solution of sodium chloride (concentration 3% by mass). Maintain 1/4- inch of sodium chloride solution above the top surface of the fully submerged specimen within the container.

Subject the submerged specimens to continuous freeze-thaw cycles as follows:

After each five cycles, remove the salt solution and particles of deteriorated concrete from the slab and collect in a watertight container. The operation is best accomplished by tilting the slab in a funnel approximately 20 inches in diameter and washing the surface of the slab with a 3% sodium chloride solution. Continue this washing until all loose particles are removed from the sample. Strain the solution through a filter and dry the residue at 221 degrees Fahrenheit to a constant mass condition. Cumulatively weigh the residue after each five cycles. The dry residue is defined as the loss of mass. Calculate the loss of mass to the nearest 0.01 pounds per square foot, not including the exposed surface of any core material on the cast or cut edges, or any of the conventional concrete face of single-sided panels. Visually rate the surfaces in accordance with 10.1.5 of ASTM C672 including any delamination of the sound absorbing material from the concrete core for composite concrete materials. After each washing of each sample, re-establish the initial submerged condition with a new solution of 3% sodium chloride before continuing with freeze-thaw cycling.

Continue the test until 30 freeze-thaw cycles have been completed.

During the test position and support each specimen to allow free circulation of the test solution under, around, and over test pieces. Support the bottom of the specimens on blocks in a manner to facilitate movement of moisture through and around the test specimens.

B.3.2.2.3 Test Report

Submit to the engineer an independent testing laboratory test report which shows that all solid and composite concrete products meet or exceed the following criteria:

1. After 30 freeze-thaw cycles the test specimens shall not exhibit excessive deterioration in the form of cracks, spalls, aggregate disintegration, delamination or other objectionable features.
2. Compliance with the test requirements is based upon a loss of mass of not more than 0.2 pounds per square foot from the surface after 30 cycles of freezing and thawing.
3. The report shall include the following:
    - 3.1. Name of manufacturer.
    - 3.2. Location of production.

3.3. Production description.

3.4. Date product sample was cast.

3.5. Date testing began.

3.6. Specimen identification.

3.7. 5x7-inch color photographs of the test specimens before and after the 30 cycles of freeze-thaw test showing both sound absorbing faces and at least one representative side view of a cut (not cast) face, and any defects.

3.8. A graph of the cumulative mass loss of each specimen plotted against the number of freeze-thaw cycles for 5, 10, 15, 20, 25, and 30 freeze-thaw cycles.

3.9. Visual rating in accordance with ASTM C672 Section 10.1.5, including report of any delamination of the sound absorbing material from the concrete core for composite concrete components.

B.3.3 Materials Certification - General

Provide certification of compliance or sample fabrications as noted below. All material certifications shall reference the specific facility manufacturing the material and this contract. Certification is required for each lot of material not to exceed 100,000 SF of noise barrier produced, and shall include dates of fabrication for the lot being certified. For projects that do not exceed 100,000 SF, a minimum of two lots of material will represent the project, each lot representing equivalent square footage.

B.3.3.1 Color and Surface Texture

Supply and deliver to the engineer a 3 foot x 5 foot minimum test panel for each panel type with the specified pattern and colors. Obtain the engineer's acceptance of the panel's pattern and color before production of the panels required for the contract. The accepted pattern and color test panels shall remain on the project site in a readily accessible location for the duration of the project. The accepted pattern and color sample panels will be the standard for all noise barriers on the project.

Manufacture noise barrier posts of the same materials throughout the project. Shop apply coating and coloring of the post and panels.

Unless plans show otherwise, wall pattern shall contain textures with relief features of sufficient depth and quantity to be distinguishable at an observation distance of 500-feet. The colors and textures chosen will be within the following parameters; however, at the discretion of the engineer, a single color and/or a single texture may be selected for either side of the noise barrier.

	FREEWAY SIDE	**RESIDENTIAL SIDE**
Number of colors	2	2
In the proportion of	75:25 (+/- 5%)	75:25 (+/-5%)
Number of textures	2	2
In the proportion of	75:25 (+/- 5%)	75:25 (+/- 5%)

Insert Specifics as Applicable

The engineer will visually inspect panels for color consistency upon arrival at the project. The panels shall have no substantial variation in color from the accepted sample panel submitted for the project. All panels with substantial color variation will be rejected and shall be removed from the project.

B.3.3.2 Structural Steel

Submit to the engineer certification of compliance, including mill certifications and heat numbers, that structural steel conforms to the properties required on the plans and shop drawings, and is galvanized after fabrication by the hot-dip process in accordance with ASTM A123. Galvanize all steel hardware and threaded fasteners, bolts, nuts, and washers in accordance with ASTM A153.

Shop coat all steel galvanized surfaces exposed to view with a deprtment-approved paint system. Clean galvanizing surfaces to be painted in accordance with SSPC-SP1 to remove, chlorides, sulfates zinc salts, oil, dirt, organic matter and other contaminants. Brush Blast clean the surfaces in accordance with SSPC-SP7 to create a slight angular surface profile (1.0 – 1.5 mils suggested) for adhesion. Do not fracture the galvanized finish or remove any dry film thickness during these processes.

After cleaning, provide a tie coat from an approved coating system that is specifically intended to be used on a galvanized surface. The tie coat shall etch the galvanized surface and prepare the surface for the top coat. Apply a top coat matching the finished color specified in B.3.2. Use a pre-approved top coat that is resistant to the effects of the sun, and is suitable for use in a marine environment. Exercise care so as not to damage the painted surfaces during shipment and erection of the noise barriers.

Use one of the qualified paint sources and products given below. An equivalent system may be used with the written approval of the engineer. Supply the engineer with the product data sheets before applying any coating. The product data sheets shall indicate the mixing and thinning directions, the recommended spray nozzles and pressures, the minimum drying time for shop applied coats, and the recommended procedures for coating galvanized bolts, nuts, and washers.

Producer	Coat	Products	Dry Film Minimum Thickness (mils)	Minimum Time Between Coats (hours)
Sherwin Williams Co. (847) 330-1250	Tie	Recoatable Epoxy Primer B67-5 Series/B67V5	2.0 to 4.0	6
	Top	Acrolon 218 HS Polyurethane, B65-650	2.0 to 4.0	NA
Carboline Co. (314) 644-1000	Tie	Rustbond Penetrating Sealer FC	1	36
	Top	Carboline 133 LH	4	NA
Wasser Corp. (253) 850-2967	Tie	MC-Ferrox B 100	3.0 to 5.0	8
	Top	MC-Luster 100	2.0 to 4.0	NA

B.3.3.3 Sound Transmission Loss (TL)

Submit to the engineer certification of compliance that the sound transmission loss of the panel material, when tested in accordance with ASTM Standard E90, achieves a transmission loss as specified in B.2.5.

B.3.3.4 Accelerated Weathering

Submit to the engineer certification of compliance that all coatings on barrier components, with the exception of structural steel and wood components comply with the following requirements when tested in accordance with ASTM Standard G155, G153, or G152 after 2400 hours of exposure on a cement based test specimens:

1. No checking when rated in accordance with ASTM D660.
2. No cracking when rated in accordance with ASTM D661.
3. No blistering when rated in accordance with ASTM D714.
4. No difference in adhesion between the unexposed control sample and an exposed sample when tested in accordance with ASTM D3359, Method A.
5. No chalking less than #7 rating when rated in accordance with ASTM D4214.
6. No color change greater than 5 NBS units when measured in accordance with ASTM D2244, using illuminant D65 and the 1964 10-degree standard observer.

B.3.3.5 Corrosion Resistance (Salt Fog Exposure)

Submit to the engineer certification of compliance that all coated steel components, with the exception of structural steel, has a coating system that has been tested for corrosion resistance in accordance with ASTM B117 and comply with the following requirements:

1. No checking when rated in accordance with ASTM D660.
2. No blistering when rated in accordance with ASTM D714.
3. No loss of adhesion when tested in accordance with ASTM D3359 with no evidence of corrosion along the edges of the samples or along the score lines, or both, or other defects.

B.4 Project Submittal Requirements

Furnish required submittals according to the following:

B.4.1 Pre-Construction Submittals

A minimum of 14 days before beginning any shop or field work, submit the following documents to the engineer conforming to standard spec 105.2 with electronic submittal to the fabrication library under standard spec 105.2.2.

1. Structural and foundation design calculations

   Design calculations shall be on 8 1/2 x 11-inch sheets, neatly bound with a title sheet listing the complete project identification number and sound barrier designation. Structural and foundation calculations shall be signed, sealed and dated by a professional engineer licensed in the State of Wisconsin.

2. Detailed design/shop drawings

   Design/shop drawings shall conform to the contract plans and the requirements of these special provisions. The design/shop drawings shall consist of plan and profile sheets, details, explanatory notes, erection diagrams, aesthetic treatments, and other working plans. All dimensions, sizes of material, material information and other information necessary for the complete fabrication and construction of the noise barrier shall be designated on the appropriate sheets. The design/shop drawings shall be drawn to an appropriate scale on reproducible sheets 11 x 17 inches including borders. Each sheet shall carry the complete project identification number and noise barrier designation. Design/shop drawings shall be signed, sealed and dated by a professional engineer licensed in the State of Wisconsin.

3. Specifications regarding installation requirements and sequence of construction, including a detailed bill of materials
4. Detailed color plan of the aesthetic treatments and finishes for the entire noise barrier.
5. Shipping, handling, and storage plan identifying methods or practices to limit post production damage

Department review does not relieve the contractor from responsibility for errors or omissions on shop drawings.

B.4.2 Pre-Installation Submittals

Supply and deliver to the engineer the sample panel required under Section B.3.3.1 at least 14 calendar days before beginning production and/or installation of job materials. Acceptance of the sample panel will be by: INSERT CONTACT INFORMATION. If the panel is not acceptable, a second panel shall be produced and submitted for acceptance. Sample panel to be representative of quality for precast panel work after acceptance. Deliver test panels to INSERT LOCATION, for comparison purposes during production of project panels.

B.4.3 Payment Submittals

Submit certifications and test data as required under B.3 for all materials, including trade name of the products along with the name and address of the manufacturers.

B.4.4 Submittal Review

The engineer's review and acceptance of the drawings, calculations, and related material, submitted by the contractor, is for compliance with design intent only, and does not relieve the contractor from responsibility in regard to errors or omissions on said submittals.

The final accepted design documents and/or shop drawings will become a part of the contract. Any substitution of materials or dimensions contemplated by the contractor's submitted documents, different from materials or dimensions the plans show, shall be made only when approved by the engineer, and in such case, additional costs resulting from such substitution shall be borne by the contractor.

Ordering materials before department acceptance of submittals is at the contractor's risk.

C Construction

C.1 General

Construct the noise barriers at locations the plans show, according to the contract specifications and design drawings and as the engineer directs. Deliver all sound absorbing composite concrete components to the project site as a finished component. A sound absorbing composite concrete system, which has the sound absorbing material glue-laminated or alternately affixed by a secondary adhesion method on the project site, will not be allowed.

Provide a minimum ten day notice to the engineer of the date that the fabrication of the noise barrier material will begin.

Inspect all materials delivered to the construction site for proper dimensions, honeycombing, cracks, voids, surface defects, consistency in color and texture, and any other damage or imperfections, before installation.

If any part of the noise barrier material fails to comply with any requirements of the contract specification, the component shall either be corrected, permanently marked as unacceptable and be disposed of by the contractor or accepted at a reduced price. The decision will be made by the engineer and is dependent on the severity of the specification deviation.

Erect noise barriers to avoid conflict with any existing facilities or utilities to remain in place. Any damage caused by construction activities shall be repaired by the contractor at no cost to the department.

C.2 Fire Hydrant Location Signs

Attach fire hydrant location signs to the noise barrier at each location the plans show by a method the department's approved drawings show. The signs shall conform and be of the type specified in the department's sign plate book, plate D9-54 and/or D9-54A.

Compensation for furnishing and placing the fire hydrant location signs shall be included in the contract price for Noise Barriers Single-Sided Sound Absorptive and no additional compensation therefore will be allowed.

C.3 Weep Hole Openings

Provide weep hole openings for drainage at the locations and sized as noted on the plan. Install weep holes by drilling through the wall after erection of the noise barrier. Use 6" PVC Schedule 40 pipe sleeve conforming to ASTM D-1785. Epoxy 6" PVC Schedule 40 pipe sleeve into bored weep hole. PVC pipe sleeve shall fit snugly in cored hole through wall. Epoxy PVC pipe sleeve into bored weep hole in noise barrier. Locate and construct weep holes in accordance with the plans and as the engineer directs. Place weep holes at locations the plans show, unless the engineer allows adjusting locations to fit field conditions. The engineer will field verify the height and location of the weep hole for positive drainage.

C.4 Name Plates

Provide name plates conforming to standard spec 506.2.4. Furnish and place one name plate on each noise barrier at the location indicated on the plans. Rigidly attach each plate to the barrier by a means approved by the engineer.

Compensation for furnishing and placing of name plates shall be included in the contract price for Noise Barriers, Single-Sided Sound Absorptive Structure and no additional compensation therefore will be allowed.

C.5 Structure Mounted Noise Barriers

Do not erect noise barriers mounted to bridge or retaining wall structures until after the concrete for bridge decks and parapets or retaining wall moment slabs and parapets have attained their specified 28-day strength.

For noise barriers mounted to moment slabs and parapets on top of MSE retaining walls, erection of the noise barrier is limited to two-thirds the height of the noise barrier acoustical line the plans show before placement of earth fill or pavement over the top of the moment slab as the plans show. Erection of the noise barrier in excess of two-thirds its height to the full height of the noise barrier acoustical line the plans show may not occur until after the earth fill or pavement structure over the top of the moment slab the plans show is complete.

C.6 Construction Tolerances

Install the posts and panels comprising the noise barrier plumb within 1/2 inch in 15-feet. Locate the posts to the line and grades the plans show to within +/- 3/4 inch. Align horizontal joints of adjacent panels to a vertical tolerance of 1/4 inch. Where vertical adjustments are required for alignment, use a mortar base or steel shims. Galvanize and prime coat steel shims in accordance with B.3.3.2.

D Measurement

The department will measure Noise Barriers Single-Sided Sound Absorptive Enter Structure # by the square foot, acceptably completed, as the area the original plans show plus engineer-approved modifications to the plan quantity caused by plan corrections or revisions.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
531.0200.S	Noise Barriers Single-Sided Sound Absorptive Enter Structure #	SF

Payment is full compensation for providing noise barrier including: coloring and aesthetic treatment on panels, preparing the design drawings and calculations, furnishing and delivering sample and test panels, materials testing, furnishing materials test reports and certifications, excavation, preparing the site, constructing foundations, erecting posts and panels, and disposing of waste materials.

145. stp-531-010 Noise Barriers Double-Sided Sound Absorptive Enter Structure #, Item 531.0300.S.

A Description

This special provision describes designing, fabricating, transporting, and erecting composite concrete double-sided sound absorptive noise barriers as the plans show and conforming to department-approved installation specifications.

B Noise Wall System

B.1 System Pre-Qualification and Selection

The noise wall system supplied must be pre-qualified by the department. The department maintains a list of pre-qualified systems which can be viewed online at:

https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/tools/appr-prod/default.aspx

Systems eligible for use on this project shall be pre-qualified before the award of this contract.

Provide the name of the selected system, and the intended fabricator to the engineer within 25 days after award of the contract. Schedule a pre-design meeting with the engineer subsequent to award of the contract and before beginning design of the noise barrier. A representative of the fabricator of the noise barrier components shall attend this meeting.

B.2 Design

B.2.1 Structural and Foundation Design

The structural and foundation design of the noise barrier system shall conform to the current edition of "AASHTO LRFD Bridge Design Specifications" published by the American Association of State Highway and Transportation Officials (AASHTO), 444 North Capitol Street, NW, Suite 225, Washington, DC 20001, with the following exceptions:

The minimum design wind pressure shall be 35 pounds per square foot (Strength III) for ground mounted noise barriers and 40 pounds per square foot (Strength III) for structure mounted noise barriers, unless specified otherwise on the plans. For ground and structure mounted noise barriers, the minimum Service I design wind pressure shall be 15 pounds per square foot. All wind loads shall be applied perpendicular to the barrier, alternately in each direction.

Design drilled shaft foundations using the Broms Method. Ignore the top 1 foot of supporting soil in the design of ground-mounted barrier foundations.

In addition to wind loads, design the bottom noise barrier panel to support the dead load (weight) of the panels directly above it and its own dead load. Assume this dead load to be distributed uniformly across the bottom panel acting as a simple beam supported at the posts.

Bottom noise barrier panels shall have a minimum amount of perimeter reinforcement of a #4 bar which shall be continuous around the corners. Reinforcing steel in the concrete core of noise barrier panels shall have a minimum clear cover of 1 inch. Clear cover does not include sound absorptive material. Design the reinforced concrete core to resist the loads without considering any composite action from other material in the panel.

Provide a neoprene bearing pad or equivalent material of 1/4 inch minimum thickness between the foundation and the bottom panels. The allowable bearing stress shall not exceed 900 psi. Precast concrete pedestals placed between the foundation and bottom panels shall be reinforced if over 1’-0" high. The bearing pads shall be preformed EPDM rubber conforming to ASTM D-2000, Grade 2, Type A, Class A with a minimum Durometer Hardness of 80.

B.2.2 Fire Hose Access Openings

Design fire hose access openings, at locations the plans show, with additional reinforcement and clear cover around the opening as necessary to maintain structural integrity. Detail drawings shall show the additional reinforcement and method for attaching the Fire Hydrant Location Signs to the barrier panel.

B.2.3 Barrier Profile

Unless the plans show or the engineer approves otherwise, design the top of the noise barrier to be horizontal and at or above the acoustic elevation line the plans show. The bottom elevation of the noise

barrier shall be as the plans show. Changes in elevation shall be accomplished by stepping sections at posts. Steps shall not exceed 3-feet in height. All joints shall be horizontal or vertical and shall be aligned with the adjacent panels.

B.2.4 Panel Orientation

Design the panels to prevent entrapment and ponding of water. Avoid inadvertently providing areas for perching, nesting of birds or collecting of dirt and debris in the design of the noise barrier system.

B.2.5 Sound Transmission Loss (TL)

Design the noise barrier panel material to achieve a transmission loss equal to or greater than 20 decibels in all test frequency bands, as referenced in ASTM E90.

B.2.6 Noise Reduction Coefficient (NRC)

Design the noise barrier system so that the highway sides of the noise barrier panels have a minimum NRC of 0.80 and the residential sides have a minimum NRC of 0.70 as referenced in ASTM C423.

B.2.7 Design Coordination

Design the noise barrier post spacing so as not to interfere with the existing utility and drainage facilities.

Design the noise barrier post spacing so as not to interfere with proposed utility and drainage facilities the plans show. This includes proposed roadway lighting and ITS facilities.

For noise barriers mounted behind or near proposed retaining walls, coordinate and design the noise barrier post spacing so as to not interfere with embedded portion of the proposed retaining walls, including MSE wall soil reinforcement and tieback anchors on soldier pile and timber lagging retaining walls.

For noise barriers mounted on proposed bridges and retaining walls, coordinate and design the noise barrier post spacing to coincide with noise barrier post and embedded noise barrier anchor assembly spacing shown on the bridge and retaining wall plans. Coordinate any required changes to the noise barrier post spacing and embedded noise barrier anchor assembly locations shown on the bridge and retaining wall plans, if required for the design of the noise barrier.

Insert Table of Structure and Retaining Wall Mounted Noise Barrier if applicable

B.2.8 Weep Hole Openings

Design panels such that weep hole openings in noise wall to allow water to drain can be field installed per C.3 at locations the plans show.

B.2.9 Maintenance Doors

Design maintenance doors and door portals in noise walls, at locations the plans show, with additional reinforcement and clear cover around the opening as necessary to maintain structural integrity per B.2.1.

B.3 Materials

Required material certifications and testing are the responsibility of the contractor. All certifications and test reports shall carry the name and address of the fabrication facility where the specific material was produced.

B.3.1 Concrete Masonry

Provide grade A, A-2, A-FA, A-S, A-T, A-IS, A-IP, or A-IT concrete conforming to standard spec 501 as modified in standard spec 716 for concrete posts and the core component of composite concrete sound absorbing panels. Provide QMP for class II ancillary concrete as specified in standard spec 716.

B.3.2 Materials Testing General

All test reports shall carry the name and address of the laboratory where testing was performed, and the name of the person in responsible charge of the specific tests for which data is presented. Materials tested shall be representative of materials manufactured for this specific contract. Panels tested or from which samples will be taken will be selected and appropriately marked by the engineer either at the manufacturer's plant or from panels delivered to the project at the engineer's option.

Testing as detailed below is required for each lot of material not to exceed 100,000 SF of noise barrier produced. Conduct testing on panels within the first 30,000 SF of production of each lot not exceeding 100,000 SF. For projects that do not exceed 100,000 SF, a minimum of two lots of material will represent the project, each lot representing equivalent square footage. The first set of tests conducted for projects

that do not exceed 100,000 SF shall be within the first third of the total square footage of the project. Provide the shipping record of the samples to the laboratory within five days of sampling. Begin testing as soon as practicable after sampling.

Test all materials as fabricated, including any specified finishing.

B.3.2.1 Noise Reduction Coefficient (NRC)

Test noise barrier panels in accordance with ASTM C423, and placed in accordance with ASTM E795, mounting type A, to determine the noise reduction coefficient (NRC) of the material. Submit to the engineer an independent laboratory test report that shows that the noise barrier panels achieve an NRC as specified in B.2.6 for the highway side of the barrier.

B.3.2.2 Long-term Durability

Test all sound absorbing composite concrete and composite concrete components for long-term durability in accordance with ASTM C672 and the following modifications and/or requirements:

B.3.2.2.1 Test Specimens

Three specimens of a full cross section of the composite panel at least 144 square inches in face area will be selected at random from the provided composite panel as defined in B.3. Sample specimens shall be representative of the manufacturer's continuous production operation, as selected and marked by the engineer. Specimens shall be 2D-symmetric and shaped according to the testing laboratory's accommodations.

Prepare the surfaces of the sample specimens for testing as follows. Brush the surfaces of the sample to remove any loose particles. Before testing, submerge the test specimens be submerged in water for a period of 24 hours before testing. Immediately following this, cover the specimens with the sodium chloride solution as stated below.

B.3.2.2.2 Test Procedure

Place samples in a 5 sided water tight container, fully submerged in a solution of sodium chloride (concentration 3% by mass). Maintain 1/4 inch of sodium chloride solution above the top surface of the fully submerged specimen within the container.

Subject the submerged specimens to continuous freeze-thaw cycles as follows:

After each five cycles, remove the salt solution and particles of deteriorated concrete from the slab and collect in a watertight container. The operation is best accomplished by tilting the slab in a funnel approximately 20 inches in diameter and washing the surface of the slab with a 3% sodium chloride solution. Continue this washing until all loose particles are removed from the sample. Strain the solution through a filter and dry the residue at 221 degrees Fahrenheit to a constant mass condition. Cumulatively weigh the residue after each five cycles. The dry residue is defined as the loss of mass. Calculate the loss of mass to the nearest 0.01 pounds per square foot, not including the exposed surface of any core material on the cast or cut edges. Visually rate the surfaces in accordance with 10.1.5 of ASTM C672 including any delamination of the sound absorbing material from the concrete core for composite concrete materials. After each washing of each sample, re-establish the initial submerged condition with a new solution of 3% sodium chloride before continuing with freeze-thaw cycling.

Continue the test until 30 freeze-thaw cycles have been completed.

During the test position and support each specimen to allow free circulation of the test solution under, around, and over test pieces. Support the bottom of the specimens on blocks in a manner to facilitate movement of moisture through and around the test specimens.

B.3.2.2.3 Test Report

Submit to the engineer an independent testing laboratory test report which shows that all solid and composite concrete products meet or exceed the following criteria:

1. After 30 freeze-thaw cycles the test specimens shall not exhibit excessive deterioration in the form of cracks, spalls, aggregate disintegration, delamination or other objectionable features.
2. Compliance with the test requirements is based upon a loss of mass of not more than 0.2 pounds per square foot from the surface after 30 cycles of freezing and thawing.
3. The report shall include the following:
    - 3.1. Name of manufacturer.
    - 3.2. Location of production.
    - 3.3. Production description.

3.4. Date product sample was cast.

3.5. Date testing began.

3.6. Specimen identification.

3.7. 5x7-inch color photographs of the test specimens before and after the 30 cycles of freeze-thaw test showing both sound absorbing faces and at least one representative side view of a cut (not cast) face, and any defects.

3.8. A graph of the cumulative mass loss of each specimen plotted against the number of freeze-thaw cycles for 5, 10, 15, 20, 25, and 30 freeze-thaw cycles.

3.9. Visual rating in accordance with ASTM C672 Section 10.1.5, including report of any delamination of the sound absorbing material from the concrete core for composite concrete components.

B.3.3 Materials Certification - General

Provide certification of compliance or sample fabrications as noted below. All material certifications shall reference the specific facility manufacturing the material and this contract. Certification is required for each lot of material not to exceed 100,000 SF of noise barrier produced, and shall include dates of fabrication for the lot being certified. For projects that do not exceed 100,000 SF, a minimum of two lots of material will represent the project, each lot representing equivalent square footage.

B.3.3.1 Color and Surface Texture

Supply and deliver to the engineer a 3 foot x 5 foot minimum test panel for each panel type with the specified pattern and colors. Obtain the engineer's acceptance of the panel's pattern and color before production of the panels required for the contract. The accepted pattern and color test panels shall remain on the project site in a readily accessible location for the duration of the project. The accepted pattern and color sample panels will be the standard for all noise barriers on the project.

Manufacture noise barrier posts of the same materials throughout the project. Shop apply coating and coloring of the post and panels.

Unless otherwise shown and provided for in the plans, wall pattern shall contain textures with relief features of sufficient depth and quantity to be distinguishable at an observation distance of 500-feet. The colors and textures chosen will be within the following parameters; however, at the discretion of the engineer, a single color and/or a single texture may be selected for either side of the noise barrier.

	FREEWAY SIDE	**RESIDENTIAL SIDE**
Number of colors	2	2
In the proportion of	75:25 (+/- 5%)	75:25 (+/-5%)
Number of textures	2	2
In the proportion of	75:25 (+/- 5%)	75:25 (+/- 5%)

Insert Specifics as Applicable

The engineer will visually inspect panels for color consistency upon arrival at the project. The panels shall have no substantial variation in color from the accepted sample panel submitted for the project. All panels with substantial color variation will be rejected and shall be removed from the project.

B.3.3.2 Structural Steel

Submit to the engineer certification of compliance, including mill certifications and heat numbers, that structural steel conforms to the properties required on the plans and shop drawings, and is galvanized after fabrication by the hot-dip process in accordance with ASTM A123. Galvanize all steel hardware and threaded fasteners, bolts, nuts, and washers in accordance with ASTM A153.

Shop coat all steel galvanized surfaces exposed to view with a department-approved paint system. Clean galvanizing surfaces to be painted in accordance with SSPC-SP1 to remove, chlorides, sulfates zinc salts, oil, dirt, organic matter and other contaminants. Brush Blast clean the surfaces in accordance with SSPC-SP7 to create a slight angular surface profile (1.0 – 1.5 mils suggested) for adhesion. Do not fracture the galvanized finish or remove any dry film thickness during these processes.

After cleaning, provide a tie coat from an approved coating system that is specifically intended to be used on a galvanized surface. The tie coat shall etch the galvanized surface and prepare the surface for the top coat. Apply a top coat matching the finished color specified in B.3.2. Use a pre-approved top coat that is resistant to the effects of the sun, and is suitable for use in a marine environment. Exercise care so as not to damage the painted surfaces during shipment and erection of the noise barriers.

Use one of the qualified paint sources and products given below. An equivalent system may be used with the written approval of the engineer. Supply the engineer with the product data sheets before applying

any coating. The product data sheets shall indicate the mixing and thinning directions, the recommended spray nozzles and pressures, the minimum drying time for shop applied coats, and the recommended procedures for coating galvanized bolts, nuts, and washers.

Producer	Coat	Products	Dry Film Minimum Thickness (mils)	Minimum Time Between Coats (hours)
Sherwin Williams Co. (847) 330-1250	Tie	Recoatable Epoxy Primer B67-5 Series/B67V5	2.0 to 4.0	6
	Top	Acrolon 218 HS Polyurethane, B65-650	2.0 to 4.0	NA
Carboline Co. (314) 644-1000	Tie	Rustbond Penetrating Sealer FC	1	36
	Top	Carboline 133 LH	4	NA
Wasser Corp. (253) 850-2967	Tie	MC-Ferrox B 100	3.0 to 5.0	8
	Top	MC-Luster 100	2.0 to 4.0	NA

B.3.3.3 Sound Transmission Loss (TL)

Submit to the engineer certification of compliance that the sound transmission loss of the panel material, when tested in accordance with ASTM Standard E90, achieves a transmission loss as specified in B.2.5.

B.3.3.4 Accelerated Weathering

Submit to the engineer certification of compliance that all coatings on barrier components, with the exception of structural steel and wood components comply with the following requirements when tested in accordance with ASTM Standard G155, G153, or G152 after 2400 hours of exposure on a cement based test specimens:

1. No checking when rated in accordance with ASTM D660.
2. No cracking when rated in accordance with ASTM D661.
3. No blistering when rated in accordance with ASTM D714.
4. No difference in adhesion between the unexposed control sample and an exposed sample when tested in accordance with ASTM D3359, Method A.
5. No chalking less than #7 rating when rated in accordance with ASTM D4214.
6. No color change greater than 5 NBS units when measured in accordance with ASTM D2244, using illuminant D65 and the 1964 10-degree standard observer.

B.3.3.5 Corrosion Resistance (Salt Fog Exposure)

Submit to the engineer certification of compliance that all coated steel components, with the exception of structural steel, has a coating system that has been tested for corrosion resistance in accordance with ASTM B117 and comply with the following requirements:

1. No checking when rated in accordance with ASTM D660.
2. No blistering when rated in accordance with ASTM D714.
3. No loss of adhesion when tested in accordance with ASTM D3359 with no evidence of corrosion along the edges of the samples or along the score lines, or both, or other defects.

B.4 Project Submittal Requirements

Furnish required submittals according to the following:

B.4.1 Pre-Construction Submittals

A minimum of 14 days before beginning any shop or field work, submit the following documents to the engineer conforming to standard spec 105.2 with electronic submittal to the fabrication library under standard spec 105.2.2.

1. Structural and foundation design calculations

Design calculations shall be on 8 1/2 x 11-inch sheets, neatly bound with a title sheet listing the complete project identification number and sound barrier designation. Structural and foundation calculations shall be signed, sealed and dated by a professional engineer licensed in the State of Wisconsin.

2. Detailed design/shop drawings

   Design/shop drawings shall conform to the contract plans and the requirements of these special provisions. The design/shop drawings shall consist of plan and profile sheets, details, explanatory notes, erection diagrams, aesthetic treatments, and other working plans. All dimensions, sizes of material, material information and other information necessary for the complete fabrication and construction of the noise barrier shall be designated on the appropriate sheets. The design/shop drawings shall be drawn to an appropriate scale on reproducible sheets 11 x 17 inches including borders. Each sheet shall carry the complete project identification number and noise barrier designation. Design/shop drawings shall be signed, sealed and dated by a professional engineer licensed in the State of Wisconsin.

3. Specifications regarding installation requirements and sequence of construction, including a detailed bill of materials.
4. Detailed color plan of the aesthetic treatments and finishes for the entire noise barrier.
5. Shipping, handling, and storage plan identifying methods or practices to limit post production damage.

Department review does not relieve the contractor from responsibility for errors or omissions on shop drawings.

B.4.2 Pre-Installation Submittals

Supply and deliver to the engineer the sample panel required under Section B.3.3.1 at least 14 calendar days before beginning production and/or installation of job materials. Acceptance of the sample panel will be by: INSERT CONTACT INFORMATION. If the panel is not acceptable, a second panel shall be produced and submitted for acceptance. Sample panel to be representative of quality for precast panel work after acceptance. Deliver test panels to INSERT LOCATION, for comparison purposes during production of project panels.

B.4.3 Payment Submittals

Submit certifications and test data as required under B.3 for all materials, including trade name of the products along with the name and address of the manufacturers.

B.4.4 Submittal Review

The engineer's review and acceptance of the drawings, calculations, and related material, submitted by the contractor, is for compliance with design intent only, and does not relieve the contractor from responsibility in regard to errors or omissions on said submittals.

The final accepted design documents and/or shop drawings will become a part of the contract. Any substitution of materials or dimensions contemplated by the contractor's submitted documents, different from materials or dimensions shown on the contract plans, shall be made only when approved by the engineer, and in such case, additional costs resulting from such substitution shall be borne by the contractor.

Ordering materials before department acceptance of submittals is at the contractor's risk.

C Construction

C.1 General

Construct the noise barriers at the locations the plans show, according to the contract specifications and design drawings and/or as the engineer directs. Deliver all sound absorbing composite concrete components to the project site as a finished component. A sound absorbing composite concrete system, which has the sound absorbing material glue-laminated or alternately affixed by a secondary adhesion method on the project site, will not be allowed.

Provide a minimum ten day notice to the engineer of the date that the fabrication of the noise barrier material will begin.

Inspect all materials delivered to the construction site for proper dimensions, honeycombing, cracks, voids, surface defects, consistency in color and texture, and any other damage or imperfections, before installation.

If any part of the noise barrier material fails to comply with any requirements of the contract specification, the component shall either be corrected, permanently marked as unacceptable and be disposed of by the contractor or accepted at a reduced price. The decision will be made by the engineer and is dependent on the severity of the specification deviation.

Erect noise barriers to avoid conflict with any existing facilities or utilities to remain in place. Any damage caused by construction activities shall be repaired by the contractor at no cost to the department.

C.2 Fire Hydrant Location Signs

Attach fire hydrant location signs to the noise barrier at each location the plans show by a method the department's approved drawings show. The signs shall conform and be of the type specified in the department's sign plate book, plate D9-54 and/or D9-54A.

Compensation for furnishing and placing the fire hydrant location signs shall be included in the contract price for Noise Barriers Double-Sided Sound Absorptive and no additional compensation therefore will be allowed.

C.3 Weep Hole Openings

Provide weep hole openings for drainage at the locations and sized as noted on the plan. Install weep holes by drilling through the wall after erection of the noise barrier. Use 6" PVC Schedule 40 pipe sleeve conforming to ASTM D-1785. Epoxy 6" PVC Schedule 40 pipe sleeve into bored weep hole. PVC pipe sleeve shall fit snugly in cored hole through wall. Epoxy PVC pipe sleeve into bored weep hole in noise barrier. Locate and construct weep holes in accordance with the plans and as the engineer directs. Place weep holes at locations the plans show unless the engineer approves adjusting locations to fit field conditions. The engineer will field verify the height and location of the weep hole for positive drainage.

C.4 Name Plates

Provide name plates conforming to the requirements of standard spec 506.2.4. Install one name plate on each noise barrier at the location the plans show. Rigidly attach each plate to the barrier by a means approved by the engineer.

Compensation for furnishing and placing of name plates shall be included in the contract price for Noise Barriers, Double-Sided Sound Absorptive Structure and no additional compensation therefore will be allowed.

C.5 Structure Mounted Noise Barriers

Do not erect noise barriers mounted to bridge or retaining wall structures until after the concrete for bridge decks and parapets or retaining wall moment slabs and parapets have attained their specified 28-day strength.

For noise barriers mounted to moment slabs and parapets on top of MSE retaining walls, erection of the noise barrier is limited to two-thirds the height of the noise barrier acoustical line the plans show before placement of earth fill or pavement over the top of the moment slab as the plans show. Erection of the noise barrier in excess of two-thirds its height to the full height of the noise barrier acoustical line the plans show may not occur until after the earth fill or pavement structure over the top of the moment slab the plans show is complete.

C.6 Construction Tolerances

Install the posts and panels comprising the noise barrier plumb within 1/2 inch in 15-feet. Locate the posts to the line and grades as the plans show to within +/- 3/4 inch. Align horizontal joints of adjacent panels to a vertical tolerance of 1/4 inch. Where vertical adjustments are required for alignment, use a mortar base or steel shims. Galvanize and prime coat steel shims in accordance with B.3.3.2.

D Measurement

The department will measure Noise Barriers Double-Sided Sound Absorptive Enter Structure # by the square foot, acceptably completed, as the area the original plans show plus engineer-approved modifications to the plan quantity caused by plan corrections or revisions.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
531.0300.S	Noise Barriers Double-Sided Sound Absorptive Enter Structure #	SF

Payment is full compensation for providing noise barrier including: coloring and aesthetic treatment on panels, preparing the design drawings and calculations, furnishing and delivering sample and test panels, materials testing, furnishing materials test reports and certifications, excavation, preparing the site, constructing foundations, erecting posts and panels, and disposing of waste materials.

146. stp-531-015 Noise Barriers Non-Absorptive Enter Structure #, Item 531.0400.S.

A Description

This special provision describes designing, fabricating, transporting, and erecting non-absorptive noise barriers.

B Materials

B.1 System Pre-Approval

The noise wall system supplied must be pre-approved by the department. The department maintains a list of pre-approved systems. To be eligible for use on this project, a system must have already been pre-approved and added to that list.

To receive pre-approval, the noise wall system must conform to this special provision. Applications for pre-approval may be submitted at any time. Applications must be prepared according to the requirements of chapter 14 of the department's Bridge Manual. Information and assistance with the pre-approval process can be obtained by contacting the New Products Engineer in the department's Technology Advancement Unit, 3502 Kinsman Blvd., Madison, WI or by calling (608) 246-7953.

B.2 Design

The department specifies non-absorptive noise barrier products on the department's approved product list.

A pre-approved double-sided or single-sided sound reflective absorptive barrier may be supplied from the list of systems above. Provide the name of the selected system to the engineer within 25 days after award of the contract. Schedule a pre-design meeting with the engineer subsequent to award of the contract and before beginning design of the noise barrier. The suppliers of the noise barrier components shall attend this meeting.

B.2.1 Structural and Foundation Design

The structural and foundation design of the noise barrier system shall conform to the current edition of "AASHTO LRFD Bridge Design Specifications" published by the American Association of State Highway and Transportation Officials (AASHTO), 444 North Capitol Street, NW, Suite 225, Washington, DC 20001, with the following exceptions:

The minimum design wind pressure shall be 35 pounds per square foot (Strength III) for ground mounted noise barriers and 40 pounds per square foot (Strength III) for structure mounted noise barriers, unless specified otherwise on the plans. For ground and structure mounted noise barriers, the minimum Service I design wind pressure shall be 15 pounds per square foot. All wind loads shall be applied perpendicular to the barrier, alternately in each direction.

The top 3-feet of supporting soil shall be ignored in the design of ground-mounted barrier foundations.

B.2.2 Fire Hose Access Openings

Design fire hose access openings, at locations the plans show, with additional reinforcement and protective coating around the opening as necessary to maintain structural integrity. Detail drawings shall show the additional reinforcement and method for attaching the Fire Hydrant Location Signs to the barrier panel.

B.2.3 Barrier Profile

Unless otherwise shown on the plan or approved by the engineer, design the top of the noise barrier to be horizontal and at or above the acoustic elevation line the plans show. The bottom elevation of the noise barrier shall be as the plans show. Changes in elevation shall be accomplished by stepping sections at posts. Steps shall not exceed 3-feet in height. All joints shall be horizontal or vertical and shall be aligned with the adjacent panels.

B.2.4 Panel Orientation

Mount corrugated or ribbed panels such that the features are not oriented horizontally. Design the panels to prevent entrapment and ponding of water. Take precautions to avoid inadvertently providing areas for perching, nesting of birds, or collecting of dirt and debris in the design of the noise barrier system.

B.2.5 Color and Surface Texture

Following execution of the contract and before determining the aesthetic design, recommend color and surface texture for the barrier. The post and panel colors shall be earth tone browns and tans. The textures shall contain relief features of sufficient depth and quantity to be distinguishable at an observation distance of 500-feet. The colors and textures chosen will be within the following parameters; however, at the discretion of the engineer, a single color and/or a single texture may be selected for either side of the noise barrier.

	FREEWAY SIDE	RESIDENTIAL SIDE
Number of colors	2	2
In the proportion of	75:25 (+/- 5%)	75:25 (+/-5%)
Number of textures	2	2
In the proportion of	75:25 (+/- 5%)	75:25 (+/- 5%)

All individual noise barrier panels shall not be more than one color, and shall be the same color on both sides, unless otherwise approved by the engineer. Noise barrier posts shall be earth tone browns or tans and manufactured of the same materials throughout the project.

Supply and deliver to the engineer sample panels with a minimum area of 4 square feet in 6 colors and 3 surface textures to be considered for the barrier. The samples provided shall be made at the plant that will be making the product for the noise barrier under this contract. The samples shall be representative of the material that was tested per the requirements of this specification.

Within ten calendar days following execution of the contract, submit drawings showing aesthetic treatment of both the freeway and residential sides of the noise barrier to the engineer. The aesthetic treatment shall use the color and textures in a linear arrangement along the length of the barrier. The drawings shall show the proposed color and surface texture scheme and shall be of sufficient detail, quality, and scale for public presentation.

After the contractor has submitted acceptable sample panels, and has recommended colors and surface textures as shown on the required aesthetic drawings, the color, texture, and aesthetic design will be selected by the engineer.

The engineer will visually inspect the panels for color consistency upon arrival at the project. The panels shall have no substantial variation in color from the sample panel that was provided for the project. All panels with substantial color variation will be rejected and shall be removed from the project.

B.2.6 Sound Transmission Loss (TL)

Design the noise barrier panel material to achieve a transmission loss equal to or greater than 20 decibels in all test frequency bands.

B.2.7 Underground Utility and Drainage Crossings

Design the noise barrier post spacing so as not to interfere with the existing utility and drainage facilities.

B.2.8 Submittal Requirements

Submit the following documents to the engineer conforming to standard spec 105.2 with electronic submittal to the fabrication library under standard spec 105.2.2.

1. All structural and foundation design calculations.
2. Detailed design drawings.
3. Specifications for all materials, including trade name of the products along with the name and address of the manufacturers.
4. Specifications regarding installation requirements and sequence of construction, including a detailed bill of materials.
5. Detailed colored plan of the aesthetic treatment for the entire noise barrier.
6. All test reports and certification required by this special provision. All test reports and certifications shall reference materials made at the specific facility, which will be manufacturing the material for this contract. Test reports and certifications shall be dated no more than two years before submittal.

Submit design calculations on 8 1/2 x 11-inch sheets, with a title sheet listing the complete project identification number and sound barrier designation. Design drawings shall conform to the contract plans and the requirements of these special provisions. The drawings shall consist of plan and profile sheets, details, explanatory notes, erection diagrams, aesthetic treatments, and other working plans. All dimensions, sizes of material, material information and other information necessary for the complete fabrication and construction of the noise barrier should be designated on the appropriate sheets. The design drawings shall be drawn to an appropriate scale on reproducible sheets 11 x 17 inches including

borders. Each sheet shall carry the complete project identification number and sound barrier designation. Design drawings and calculations shall be signed, sealed and dated by a Professional Engineer licensed in the State of Wisconsin.

B.2.9 Review Process

The department will return documents from this submittal, and any subsequent submittals, to the fabrication library, either indicating acceptance or marked with required revisions and/or corrections. Non-acceptable documents will be returned to the fabrication library for correction. The contractor shall resubmit the corrected documents to the fabrication library. Acceptance will be given when the resubmitted documents are found to be acceptable by the engineer.

It is expressly understood that the engineer's review and acceptance of the drawings, calculations, and related material, submitted by the contractor, means only an acceptance of the character and sufficiency of the details, and does not relieve the contractor from responsibility in regard to errors or omissions on said submittals.

Departmental review, including review of 1 revision, will be completed within 28 calendar days after receipt of a complete submittal in the department office. No time extensions will be granted for any additional reviews required.

The design documents shall become a part of the contract. Any substitution of materials or dimensions contemplated by the contractor's submitted documents, different from materials or dimensions shown on the contract plans, shall be made only when approved by the engineer, and in such case, additional costs resulting from such substitution shall be borne by the contractor.

Ordering of materials by the contractor before acceptance of the submittal requirements shall be at the contractor's own risk.

B.3 Wall System Materials and Required Testing

Products tested should be tested as a system; this includes stain intended for the supplied concrete wall panels.

B.3.1 Sound Transmission Loss (TL)

Submit to the engineer test reports from an accredited independent testing laboratory that show that the sound transmission loss of the panel material, when tested according to ASTM Standard E90, achieves a transmission loss as specified in this special provision.

B.3.2 Accelerated Weathering

All barrier components, with the exception of structural steel and wood components shall be tested for accelerated weathering according to this special provision. Concrete posts shall be included in this test.

Four unscored samples shall be prepared for each barrier component. One shall be set aside for reference; the other three shall undergo weatherometer exposure according to the requirements of ASTM Standard G26 or G23. The test shall be conducted in equipment operating at 131 ±5 degrees Fahrenheit using a cycle of 102 minutes of light followed by 18 minutes of light and water spray. Soft water specimen spray shall be alternated weekly with tap water.

Evaluation shall be done after 800, 1600, and 2400 hours exposure. After each evaluation, one panel of each system shall be removed from the weatherometer and retained. When removed for retention, the panels shall be photographed in color. A color reference (18%grey) shall be included in each photograph. The photographs shall be kept for reference.

Submit to the engineer an independent testing laboratory test report, including 5 x 7-inch color photos, which states that the coating system shows:

1. No checking when rated according to ASTM D660.
2. No cracking when rated according to ASTM D661.
3. No blistering when rated according to ASTM D714.
4. No difference in adhesion between the unexposed control sample and an exposed sample when tested according to ASTM D3359, Method A.
5. No chalking less than #7 rating when rated according to ASTM D4214.
6. No color change greater than 5 NBS units when measured according to ASTM D2244, using illuminant D65 and the 1964 10 degree standard observer.

B.3.3 Corrosion Resistance (Salt Fog Exposure)

All coated steel components with the exception of structural steel shall be tested for corrosion resistance according to this special provision.

Four sets of samples consisting of one scored and one unscored panel per set shall be prepared for each coating system. One set of samples shall be set aside for reference, the other three sets shall be placed in a salt fog chamber and tested according to ASTM Standard B117. One set of samples shall be removed and evaluated at the end of each successive 800-hour interval until all sets have been removed. Color photographs shall be taken of each set before and after stripping. The panels and photographs shall be retained for reference.

Submit to the engineer an independent testing laboratory test report, including 5 x 7-inch color photos, which shows that the coating system shows no checking when rated according to ASTM D660; no blistering when rated according to ASTM D714; no loss of adhesion when tested according to ASTM D3359; no evidence of corrosion along the edges of the samples or along the score lines or other defects.

B.3.4 Structural Steel

All structural steel exposed to view shall either be coated with an epoxy paint system conforming to standard spec 517 as modified in this special provision, or galvanized after fabrication by the hot dip process according to ASTM A123. Steel posts of post and panel walls shall be galvanized. Any galvanized surfaces exposed to view shall be coated with an approved paint system.

Select a complete coating system from the department's approved product list. The color of epoxy shall be white, and the urethane coating material shall be that which is approved by the engineer according to Federal Standard 595. Supply the engineer with the product data sheets before any coating is applied. The product data sheets shall indicate the mixing and thinning directions, the recommended spray nozzles and pressures, the minimum drying time for shop applied coats, and the recommended procedures for coating galvanized bolts, nuts, and washers.

B.3.5 Salt Scaling Resistance

All sound absorbing concrete and composite concrete components with a Noise Reduction Coefficient greater than 0.25 shall be tested for salt scaling resistance according to the following test procedure:

1. **Apparatus**. The freezing apparatus shall consist of a suitable cabinet or cold room with controls to maintain an air temperature of 0 ±5 degrees Fahrenheit. The thawing and air drying apparatus shall consist of a suitable cabinet or room with controls to maintain an air temperature of 73 ±3 degrees Fahrenheit and a relative humidity of 50 ±5 percent. The scale or balance shall have a minimum capacity of 15 pounds with an accuracy of 0.0001 pounds. The drying oven shall be capable of maintaining a temperature of 221 ±3 degrees Fahrenheit.
2. **Freezing and Thawing Cycles.** One freeze-thaw cycle shall be completed every 24 hours. The cycle shall consist of 16 hours ±1 hour freezing followed by 8 hours ±1 hour thawing. When, because of work schedules or other reasons, a thaw period cannot begin at the specified time, the specimens shall remain in the freezing cabinet.
3. **Test Specimens.** For the purposes of the test, three specimens at least 12 x 12 inches shall be selected at random from the finished product. Specimens shall be from differing production lots and representative of the manufacturer's continuous production.

   The surface of the sound reflective absorbing material shall be prepared for testing as follows. Brush the surface of the sample to remove any loose particles. The surfaces of the specimens shall be diked in a manner to prevent leakage. The test specimens shall then be submerged in water for a period of 24 hours before testing. Immediately following this, the specimens shall be covered with the sodium chloride solution as stated below.
4. **Test Procedure.** A solution of sodium chloride (concentration 3% by mass) shall be placed on the diked surface to a depth of 1/4 inch.

   The specimens shall then be subjected to continuous freeze-thaw cycles as follows:

   After each five cycles, the salt solution and particles of deteriorated concrete shall be removed from the slab and collected in a watertight container. The operation is best accomplished by tilting the slab in a funnel approximately 20 inches in diameter and washing the surface of the slab with a 3% sodium chloride solution. This washing should continue until all loose particles are removed from the concrete. The solution shall then be strained through a filter and the residue dried out at 221 degrees Fahrenheit to a constant mass condition. The residue shall be cumulatively weighed after each 5 cycles. This residue shall be defined as the loss of mass and expressed in pounds per square foot of exposed slab area. The loss of mass shall be calculated to the nearest 0.01 pounds per square foot.

   After the washing of each slab a new solution of sodium chloride shall be placed on the surface.

   The test shall continue until 50 freeze-thaw cycles have been completed.

During the test each specimen shall be positioned and supported to allow free air circulation under, around, and over test pieces. The bottom of the specimens shall be supported on wooden blocks in a manner to assure movement of moisture through the test pieces.

5. **Report.** Submit to the engineer an independent testing laboratory test report which shows that all solid and composite concrete products meet or exceed the following criteria:
   - 5.1. After 50 freeze-thaw cycles the test specimens shall not exhibit excessive deterioration in the form of cracks, spalls, aggregate disintegration or other objectionable features.
   - 5.2. Compliance with the test requirements is based upon a loss of mass of not more than 0.2 pounds per square foot from the surface after 50 cycles of freezing and thawing.
   - 5.3. The report shall include the following:
     - 5.3.1. Name of manufacturer.
     - 5.3.2. Location of production.
     - 5.3.3. Production description.
     - 5.3.4. Date product sample was cast.
     - 5.3.5. Date testing began.
     - 5.3.6. Specimen identification.
     - 5.3.7. 5x7-inch color photographs of the test specimens before and after the 50 cycles freeze-thaw test. Photographs at intermediate stages of the test are optional.
     - 5.3.8. A graph of the cumulative mass loss of each specimen plotted against the number of freeze-thaw cycles for 5, 10, 15, 20, 25, 30, 40, and 50 freeze-thaw cycles.

B.3.6 Sound Absorptive Concrete Composite Panels

All sound absorptive concrete composite panels (NRC greater than 0.25) shall be coated with a surface sealer/stain which will provide passing test results for Sound Transmission Loss, Noise Reduction Coefficient, and Accelerated Weathering as defined in this special provision.

B.3.7 Steel Panels

All steel panels shall be minimum nominal 20 gauge galvanized steel. The steel panels shall be free from laminations, blisters, slivers, open seams, pits from heavy rolled-in scale, ragged edges or other defects which may affect their appearance or use for the intended purpose. All shearing, cutting, and punching shall be done before preparation of the panels for application of coatings.

B.3.8 Aluminum Panels

All aluminum panels shall be minimum 0.063 inch nominal thickness or greater. The aluminum panels shall be free from laminations, blisters, slivers, open seams, pits from heavy rolled-in scale, ragged edges or other defects which may affect their appearance or use for the intended purpose. All aluminum panels shall conform to the thickness tolerances of the Aluminum Association, Inc. All shearing, cutting, and punching shall be done before preparation of the panels for application of coatings.

B.3.9 Timber Components

Lumber and timber shall conform to the requirements of standard spec 507 as modified in this special provision.

B.3.9.1 Species of Wood

All lumber and timber, with the exception of Glue Laminated Timber, shall be from one of the following species: Douglas Fir-Larch, Southern Pine, and Hem-Fir.

Glue laminated timber shall be Southern Pine.

B.3.9.2 Preservative Treatment

All timber components shall receive a chemical preservative treatment. The wood shall be dried to 19% or less before treatment. The wood shall be treated using a chromate-copper arsenate solution conforming to standard spec 507.2.2.6. After treatment, all wood having nominal dimensions less than 3 inches by 3 inches shall be air or kiln dried to a maximum moisture content of 15%. Wood in greater dimensions shall be dried to maximum moisture content of 19%. The required Certificate of Preservative Treatment shall indicate compliance with the maximum moisture content requirements, in addition to requirements of the preservative treatment specifications herewith set forth. Wood shall be protected from increases in moisture content until incorporated into the work.

B.3.9.3 Glue Laminated Timber

Glue Laminated Timber shall contain the mark of a recognized inspection agency as being in conformance with ANSI/AITC A190.1. A wet-use adhesive suitable for use with treated wood as shown in ANSI/AITC A190.1 shall be used. Members shall be of Industrial appearance grade per AITC 110.

Lumber to be glue laminated shall be pressure preservative treated before gluing to a retention of 0.4 pounds per cubic foot.

B.3.9.4 Lumber

Non-Laminated Timber shall not exceed the proportion of six (nominal width) to one (nominal thickness) and shall be No. 1 grade or better. Sound knots shall extend through members no farther than 50 percent of the cross-section width. Unsound knots are not permitted. Knots are not permitted in the fastening area of any member.

B.3.9.5 Plywood

Plywood shall be exterior type conforming to the provisions of the US Product Standards PS-1 and shall bear the mark of a qualified and approved inspection and testing agency.

B.3.9.6 Sealant/Stain

Coat wood components of the barrier system with a wood sealer/stain.

The manufacturer shall select a sealer/stain from the department's approved product list. Product data sheets shall be provided which indicate the mixing directions and recommended methods of application. The method and rate of application shall be as recommended by the producer.

B.3.10 Hardware and Fasteners

All hardware and fastening devices shall be either hot dipped galvanized steel or made of nonferrous or stainless steel. Fastening devices shall be screws; no nails or staples shall be allowed.

B.3.11 Mineral Fiber Material

Mineral fiber material used shall be manufactured according to Federal Specification HH-1-558B and ASTM C612. Mineral fiber material shall have a minimum density of 6 pounds per cubic foot, shall absorb less than 1 percent of water when tested according to ASTM C553, be noncorrosive, and nonhygroscopic. The mineral fiber material shall be fastened to the noise barrier system in a manner to prevent sagging when in a saturated condition.

C Construction

C.1 General

Construct noise barriers at the locations the plans show conforming to the plan details and as the engineer directs.

Provide a minimum 10 day notice to the engineer of the date that the fabrication of the noise barrier material will begin.

Inspect all materials delivered to the construction site for proper dimensions, honey combing, cracks, voids, surface defects, consistency in color and texture, and for any other damage or imperfections, before installation.

If any part of the noise barrier material fails to comply with any requirements of the contract specification, the component shall either be corrected, permanently marked as unacceptable and be disposed of by the contractor or accepted at a reduced price. The decision will be made by the engineer and is dependent on the severity of the specification deviation.

C.2 Fire Hydrant Location Signs

Attach fire hydrant location signs to the noise barrier at each location the plans show by a method the department's approved drawings show. The signs shall conform and be of the type specified in the department's sign plate book, plate D9-54 and/or D9-54A.

Compensation for furnishing and placing the fire hydrant location signs shall be included in the contract price for Noise Barriers Non-Absorptive and no additional compensation, therefore will be allowed.

C.3 Name Plates

Provide name plates conforming to the requirements of standard spec 506.2.4. Install one name plate on each noise barrier at the location the plans show.

Rigidly attach each plate to the barrier by a means approved by the engineer.

Compensation for furnishing and placing of name plates shall be included in the contract price for Noise Barriers Non-Absorptive and no additional compensation therefore will be allowed.

D Measurement

The department will measure Noise Barriers Non-Absorptive Enter Structure # by the square foot, acceptably completed, measured as the area the original plans show plus engineer-approved modifications to the plan quantity caused by plan corrections or revisions.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
531.0400.S	Noise Barriers Non-Absorptive Enter Structure #	SF

Payment is full compensation for providing noise barrier including coloring and aesthetic treatment on panels; for preparing the design drawings and calculations; for furnishing and delivering sample and test panels; for testing, noise barrier materials; for excavation, preparing the site, constructing foundations, erecting posts and panels, and disposing of waste materials.

stp-531-015 (20200629)

147. stp-532-040 Precast Panels for Soldier Pile Walls, Item 532.1000.S.

A Description

This special provision describes fabricating, furnishing, transporting and erecting precast concrete panels for soldier pile walls.

B Materials

B.1 General

Furnish precast panels that conform to the plan details.

Furnish steel reinforcement conforming to standard spec 505.

Furnish Grade A, A-FA, A-S, A-T, A-IS, or A-IP air-entrained concrete conforming to standard spec 501.

B.2 Plant Certification

Obtain all precast concrete panels from fabrication plants that comply with the department's plant certification program in standard spec 106.3.3.3.1.

C Construction

C.1 General

Before fabricating panels, verify that no field modifications were made to the top of footing elevations. Field modifications will require adjustments to the panel heights listed on the plans.

C.2 Placing Concrete

Handle and place the concrete conforming to standard spec 502.3.5.

C.3 Curing

Cure the concrete panels by any of the methods specified in standard spec 502.3.8.

C.4 Transportation, Storage, and Erection

Transport, handle, store, and erect precast panels in a way that prevents cracking or other damage to the panels. Discard and replace units damaged by improper handling or storing.

D Measurement

The department will measure Precast Panels for Soldier Pile Walls by the square foot, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
532.1000.S	Precast Panels for Soldier Pile Walls	SF

Payment for Precast Panels for Soldier Pile Walls is full compensation for furnishing all materials; for fabricating; for all handling, hauling and erecting; and for discarding and replacing units damaged by improper handling or storage.

stp-532-040 (20161130)

550-010 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP when any of the following items are included in the project, and Wave Equation Analysis will be used to determine pile capacity.

550.5100.S Piling Wave Analysis Steel HP 10-Inch X 42 Lb LF

550.5120.S Piling Wave Analysis Steel HP 12-Inch X 53 Lb LF

550.5125.S Piling Wave Analysis Steel HP 12-Inch X 74 Lb LF

550.5140.S Piling Wave Analysis Steel HP 14-Inch X 73 Lb LF

550.6102.S Piling Wave Analysis CIP Concrete 10 3/4 X 0.219-Inch LF

550.6104.S Piling Wave Analysis CIP Concrete 10 3/4 X 0.25-Inch LF

550.6106.S Piling Wave Analysis CIP Concrete 10 3/4 X 0.365-Inch LF

550.6108.S Piling Wave Analysis CIP Concrete 10 3/4 X 0.50-Inch LF

550.6122.S Piling Wave Analysis CIP Concrete 12 3/4 X 0.219-Inch LF

550.6124.S Piling Wave Analysis CIP Concrete 12 3/4 X 0.25-Inch LF

550.6126.S Piling Wave Analysis CIP Concrete 12 3/4 X 0.375-Inch LF

550.6128.S Piling Wave Analysis CIP Concrete 12 3/4 X 0.50-Inch LF

550.6142.S Piling Wave Analysis CIP Concrete 14 X 0.219-Inch LF

550.6144.S Piling Wave Analysis CIP Concrete 14 X 0.25-Inch LF

550.6146.S Piling Wave Analysis CIP Concrete 14 X 0.375-Inch LF

550.6148.S Piling Wave Analysis CIP Concrete 14 X 0.50-Inch LF

550.6162.S Piling Wave Analysis CIP Concrete 16 X 0.219-Inch LF

550.6164.S Piling Wave Analysis CIP Concrete 16 X 0.25-Inch LF

550.6166.S Piling Wave Analysis CIP Concrete 16 X 0.375-Inch LF

550.6168.S Piling Wave Analysis CIP Concrete 16 X 0.50-Inch LF

550.7100.S Piling Wave Analysis Precast Concrete 10-Inch LF

550.7120.S Piling Wave Analysis Precast Concrete 12-Inch LF

550.7140.S Piling Wave Analysis Precast Concrete 14-Inch LF

550.7160.S Piling Wave Analysis Precast Concrete 16-Inch LF

Delete the items not be used for your project from the title and from the table in section E Payment.

148. stp-550-010 Piling Wave Analysis Steel HP 10-Inch X 42 Lb, Item 550.5100.S;
Piling Wave Analysis Steel HP 12-Inch X 53 Lb, Item 550.5120.S;
Piling Wave Analysis Steel HP 12-Inch X 74 Lb, Item 550.5125.S;
Piling Wave Analysis Steel HP 14-Inch X 73 Lb, Item 550.5140.S;
Piling Wave Analysis CIP Concrete 10 3/4 X 0.219-Inch, Item 550.6102.S;
Piling Wave Analysis CIP Concrete 10 3/4 X 0.25-Inch, Item 550.6104.S;
Piling Wave Analysis CIP Concrete 10 3/4 X 0.365-Inch, Item 550.6106.S;
Piling Wave Analysis CIP Concrete 10 3/4 X 0.50-Inch, Item 550.6108.S;
Piling Wave Analysis CIP Concrete 12 3/4 X 0.219-Inch, Item 550.6122.S;
Piling Wave Analysis CIP Concrete 12 3/4 X 0.25-Inch, Item 550.6124.S;
Piling Wave Analysis CIP Concrete 12 3/4 X 0.375-Inch, Item 550.6126.S;
Piling Wave Analysis CIP Concrete 12 3/4 X 0.50-Inch, Item 550.6128.S;
Piling Wave Analysis CIP Concrete 14 X 0.219-Inch, Item 550.6142.S;
Piling Wave Analysis CIP Concrete 14 X 0.25-Inch, Item 550.6144.S;
Piling Wave Analysis CIP Concrete 14 X 0.375-Inch, Item 550.6146.S;
Piling Wave Analysis CIP Concrete 14 X 0.50-Inch, Item 550.6148.S;
Piling Wave Analysis CIP Concrete 16 X 0.219-Inch, Item 550.6162.S;
Piling Wave Analysis CIP Concrete 16 X 0.25-Inch, Item 550.6164.S;
Piling Wave Analysis CIP Concrete 16 X 0.375-Inch, Item 550.6166.S;
Piling Wave Analysis CIP Concrete 16 X 0.50-Inch, Item 550.6168.S;

Piling Wave Analysis Precast Concrete 10-Inch, Item 550.7100.S;
Piling Wave Analysis Precast Concrete 12-Inch, Item 550.7120.S;
Piling Wave Analysis Precast Concrete 14-Inch, Item 550.7140.S;
Piling Wave Analysis Precast Concrete 16-Inch, Item 550.7160.S.

Conform to standard spec 550 as modified in this special provision.

Replace standard spec 550.3.5.1 with the following:

550.3.5.1 General

(1) Furnish a pile driving system capable of driving piles to the required driving resistance with a minimum blow count of 30 blows/foot and with a minimum rated hammer energy of 12,500 ft-lbs.

(2) The engineer will determine if the contractor's equipment is capable of driving piles to the required driving resistance and tip elevation using wave equation analysis and/or other judgments.

(3) The wave equation criteria used by the engineer to evaluate the driving system will consist of both the required number of hammer blows per foot of penetration as well as the pile stress at the required driving resistance. For the driving system to be acceptable it shall meet the following criteria:

1. The required number of hammer blows indicated by the wave equation at the required driving resistance shall be between 30 and 150 blows per foot.
2. For steel piles and pile shells, the maximum compressive driving stress shall not exceed 90% of the certified minimum yield strength of the steel grade furnished.
3. For pre-stressed concrete piles, the maximum tensile driving stresses shall not exceed the value of three multiplied by the sum of the square root of the concrete compressive strength (f'_c) plus the effective pre-stress value (f_{pe}) with both f'_c and f_{pe} $_c = 3(f'_c)^{0.5}+f_{pe}$. The maximum compressive driving stresses shall not exceed $0.85f'_c-f_{pe}$.

(4) Use an engineer-approved pile driving system. Do not drive piles until the engineer approves the driving equipment. Submit department form DT3550 to the engineer at least 30 days before driving piles. Resubmit DT3550 if proposing changes to a previously approved pile driving system. Obtain form DT3550 at:

http://wisconsindot.gov/Documents/formdocs/dt3550.doc

(5) The engineer may order the contractor to remove pile driving system components from service it they cause insufficient energy transfer or damage the pile. Do not return a component to service until the engineer determines that it has been satisfactorily repaired or adjusted.

Replace standard spec 550.3.6 with the following:

550.3.6 Driving Resistance

(1) Drive piles to the depths necessary to obtain the required driving resistance as determined by the engineer from wave equation analysis. If the plans show a minimum tip elevation, drive to that elevation even if the required driving resistance is achieved sooner. Drive beyond that elevation if necessary, to also achieve the required driving resistance.

Add the following to standard spec 550.5.1:

ITEM NUMBER	DESCRIPTION	UNIT
550.5100.S	Piling Wave Analysis Steel HP 10-Inch X 42 Lb	LF
550.5120.S	Piling Wave Analysis Steel HP 12-Inch X 53 Lb	LF
550.5125.S	Piling Wave Analysis Steel HP 12-Inch X 74 Lb	LF
550.5140.S	Piling Wave Analysis Steel HP 14-Inch X 73 Lb	LF
550.6102.S	Piling Wave Analysis CIP Concrete 10 3/4 X 0.219-Inch	LF
550.6104.S	Piling Wave Analysis CIP Concrete 10 3/4 X 0.25-Inch	LF
550.6106.S	Piling Wave Analysis CIP Concrete 10 3/4 X 0.365-Inch	LF
550.6108.S	Piling Wave Analysis CIP Concrete 10 3/4 X 0.50-Inch	LF
550.6122.S	Piling Wave Analysis CIP Concrete 12 3/4 X 0.219-Inch	LF
550.6124.S	Piling Wave Analysis CIP Concrete 12 3/4 X 0.25-Inch	LF
550.6126.S	Piling Wave Analysis CIP Concrete 12 3/4 X 0.375-Inch	LF

550.6128.S	Piling Wave Analysis CIP Concrete 12 3/4 X 0.50-Inch	LF
550.6142.S	Piling Wave Analysis CIP Concrete 14 X 0.219-Inch	LF
550.6144.S	Piling Wave Analysis CIP Concrete 14 X 0.25-Inch	LF
550.6146.S	Piling Wave Analysis CIP Concrete 14 X 0.375-Inch	LF
550.6148.S	Piling Wave Analysis CIP Concrete 14 X 0.50-Inch	LF
550.6162.S	Piling Wave Analysis CIP Concrete 16 X 0.219-Inch	LF
550.6164.S	Piling Wave Analysis CIP Concrete 16 X 0.25-Inch	LF
550.6166.S	Piling Wave Analysis CIP Concrete 16 X 0.375-Inch	LF
550.6168.S	Piling Wave Analysis CIP Concrete 16 X 0.50-Inch	LF
550.7100.S	Piling Wave Analysis Precast Concrete 10-Inch	LF
550.7120.S	Piling Wave Analysis Precast Concrete 12-Inch	LF
550.7140.S	Piling Wave Analysis Precast Concrete 14-Inch	LF
550.7160.S	Piling Wave Analysis Precast Concrete 16-Inch	LF

stp-550-010 (20150630)

149. stp-601-005 Concrete Curb Precast, Item 601.0199.S.

A Description

This special provision describes furnishing and placing precast concrete curb as the plans show.

B Materials

Furnish a precast concrete curb produced in a certified plant that conforms to the plan details or to a substantially equivalent design the engineer approves.

The concrete mixture shall not contain less than 565 pounds of cementitious materials per cubic yard.

C (Vacant)

D Measurement

The department will measure Concrete Curb Precast as each individual unit, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
601.0199.S	Concrete Curb Precast	EACH

Payment is full compensation for furnishing all materials, pins, concrete masonry, and reinforcement; and placing precast concrete curb.

stp-601-005 (20150630)

150. stp-604-010 Slope Paving Repair Crushed Aggregate, Item 604.9010.S.

A Description

This special provision describes providing crushed aggregate slope paving where erosion has occurred.

Conform to standard spec 604 as modified in this special provision.

B Materials

Furnish materials conforming to standard spec 604.2.

C Construction

Replace paragraph (1) of standard spec 604.3.2 with the following:

(1) Place the crushed aggregate on the prepared foundation in areas where erosion has occurred. Shape and consolidate it using mechanical or hand methods to provide a stable, even and uniform surface.

D Measurement

The department will measure Slope Paving Repair Crushed Aggregate by the cubic yard, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
604.9010.S	Slope Paving Repair Crushed Aggregate	CY

Payment is full compensation for all excavating and backfilling required to prepare the foundation; disposing of surplus materials; providing, handling, placing, and consolidating the crushed aggregate; providing, handling, heating, and for applying the asphaltic material.

stp-604-010 (20100709)

151. stp-604-015 Reseal Crushed Aggregate Slope Paving, Item 604.9015.S.

A Description

This special provision describes sealing existing crushed aggregate slope paving as the engineer directs and conforming to standard spec 604 as modified in this special provision.

B Materials

Furnish materials conforming to standard spec 604.2.

C Construction

Clean all debris from the surface of the slope paving before applying asphalt. Apply sufficient asphalt so that it penetrates to seal the top 2 inches of aggregate; where existing asphalt is closer to the surface of the aggregate, apply less asphalt.

D Measurement

The department will measure Reseal Crushed Aggregate Slope Paving in area by the square yard of slope paving, acceptably resealed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
604.9015.S	Reseal Crushed Aggregate Slope Paving	SY

Payment is full compensation for cleaning the surface; furnishing and applying the asphalt.

stp-604-015 (20100709)

606-005 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

A transition mat is an alternative for riprap. It is a mat mechanically-anchored by rust resistant cable or banding and earth anchor system and is designed with voids throughout the structure which enable vegetative growth. Transition mats provide mechanical protection over highly-erosive areas, like pipe outfalls, over-flow structures, and stream banks. Transition mats provide resistance against much greater shear stress and velocities than vegetation alone, provide a reasonably flat surface that can be used within a roadway clear zone, are more aesthetically pleasing than riprap and in some cases driven over. Transition mats generally do not dissipate energy by impact, but mechanically protect the critical area until the high energy forces have dissipated via expansion/widening of the scour area. The resulting downstream forces are managed by appropriate soil covers calculated and specified as part of the transition mat engineered system. Transition mats may be used in conjunction with riprap sections providing flow leveling or transitions not accommodated by vegetation alone. In special circumstances may be used to provide immediate erosion and scour protection in earthen channels where such protections are justified.

Vegetation may be difficult to establish with a transition mat due to limited sunlight and water, consider using a Watering SPV when vegetation will be an integral part of the system.

152. stp-606-005 Transition Mat, Item 606.1100.S.

A Description

This special provision describes providing transition mat as the plans show, the contract specifies, or as the engineer directs.

B Materials

Provide a UV stabilized transition mat with voids for vegetative establishment. Submit a certified report of test, showing independent third party testing, certifying that the Transition Mat conforms to the following in Table 1.

Table 1: Material Tests

Property	Test Method	Units	Value
Shear (un-vegetated)	ASTM D-6460[1]	lb/ft^2	8.0

[1] Testing must be conducted as a complete system (Transition Mat, underlayment mat, and anchors).

Submit the Certification of Compliance showing that the materials used comply with Table 2.

Table 2: Material Certifications

Material	Property	Test Method	Value
Plastics/composites/polymers/rubber	UV Stability	ASTM D 4355	70 % tensile strength
Wet Cast Concrete	Resistance to Freeze/Thaw	ASTM C666	The block shall retain 80% of the relative dynamic modulus with no more than 1% loss of initial weight.
Dry Cast Concrete	Resistance to Freeze/Thaw	ASTM-C-1262 in a 3% saline solution, 40 cycles	1% loss of its initial weight

Provide ground anchors capable of anchoring a minimum of 24 inches deep in sandy soils, and 18 inches deep in other soils, and providing a minimum of 40 lbs. of holding capacity per square foot to resist uplift forces created by high velocities. Individual anchor holding capacity and spacing will factor into providing square foot holding capacity. The anchor cable shall be of a rust resistant material. Staples or stakes are not allowed as an anchoring method.

Submit the Certified Report of Test from Table 1, Certification of Compliance from Table 2, manufacturer's installation methodology, and if steel or iron is a part of the system a Buy America Certification to the engineer at the Preconstruction conference for review and product acceptance.

C Construction

Install transition mat according to the plans and manufacturer's guidelines including any underlayment used in performance testing as specified in table 1, with the exception of anchoring. Anchoring shall be sufficient to hold the mat intimately to the ground surface and shall use a cable and soil anchor system. Staples or stakes shall not be allowed as an acceptable anchoring system.

Grade a level, smooth surface at the scour area to avoid water concentration and to create an appropriate base for the Transition Mat. Seed and fertilize the prepared surface before the installation of the Transition Mat system. Install Transition Mat at or below the surface of the outlet.

D Measurement

The department will measure Transition Mat by the square yard of material incorporated in the work, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
606.1100.S	Transition Mat	SY

Payment is full compensation for preparation of the topsoil bed, and for furnishing and installing Transition Mat systems, including underlayment mats and anchors.

stp-606-005 (20110930)

606-050 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use to ensure the quality of the underwater placed backfill or riprap at piers and abutments where the backfill or riprap placement is critical and inspection cannot be performed from above.

153. stp-606-050 Underwater Substructure Backfill or Riprap Inspection Enter Structure #, Item 606.9105.S.

A Description

This special provision describes providing underwater inspections of the substructure backfill or riprap.

B (Vacant)

C Construction

After placement of backfill or riprap for the substructure, provide a diver who, under the direction of the engineer, will report the characteristics and quality of the backfill or riprap placed below water level to ensure that the backfill or riprap has been properly placed, consistent with the details shown in the plans.

Provide a video monitor and video camera, along with two-way audio communications with the diver during the inspection and record the video and audio.

Correct all deficiencies in the backfill or riprap and repeat the inspections until all deficiencies are corrected.

D Measurement

The department will measure Underwater Substructure Backfill or Riprap Inspection Enter Structure # once for each individual unit, acceptably completed. The entire pier or abutment substructure location is considered a unit. Multiple underwater inspections at the same substructure location to correct backfill or riprap deficiencies will not be measured.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
606.9105.S	Underwater Substructure Backfill or Riprap Inspection Enter Structure #	EACH

Payment is full compensation for all diving inspections and reporting; and for supplying video and two-way audio communications equipment and recorded electronic video and audio files. Payment for correcting deficiencies in the backfill or riprap will be included at no extra cost to the project.

stp-606-050 (20190618)

Requires cover plates and establishes tolerance in accuracy for placing covers. If paragraph No. 2 is used, STSP 611-006 is required.

154. stp-611-005 Adjusting Manhole Covers, Item 611.8110.

This special provision describes adjusting manhole covers conforming to standard spec 611 as modified in this special provision.

Adjust manhole covers located in pavement areas in two separate operations. Initially, remove designated manhole covers along with sufficient pavement to permit installation of temporary cover plate over the opening. Fill the excavated area with asphaltic pavement mixture, which shall remain in place until contract milling and paving operations permit setting the manhole frames to grade. During the second phase, remove the asphaltic pavement mixture surrounding the manhole plus the temporary cover plate, and set the manhole cover to final grade. The department will measure and pay for the items of asphaltic pavement mixture, temporary cover plate, milling, and paving separately.

Supplement standard spec 611.3.7 with the following:

Set the manhole frames so that they comply with the surface requirements of standard spec 450.3.2.9. At the completion of the paving, a 6-foot straightedge shall be placed over the centerline of each manhole frame parallel to the direction of traffic. A measurement shall be made at each side of the frame. The two measurements shall be averaged. If this average is greater than 5/8 inches, reset the manhole frame to the correct plane and elevation. If this average is 5/8 inches or less but greater than 3/8 inches, the manhole frame shall be allowed to remain in place but shall be paid for at 50 percent of the contract unit price.

If the manhole frame is higher than the adjacent pavement, the two measurements shall be made at each end of the straightedge. These two measurements shall be averaged. The same criteria for acceptance and payment as above, shall apply.

stp-611-005 (20200629)

155. stp-611-006 Cover Plates Temporary, Item 611.8120.S.

A Description

This special provision describes providing and removing steel plates to cover and support asphaltic pavement and traffic loading at manholes, inlets and similar structures during milling and paving operations.

B Materials

Provide a 0.25 inch minimum thickness steel plate that extends to the outside edge of the existing masonry.

C (Vacant)

D Measurement

The department will measure Cover Plates Temporary as each individual unit, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
611.8120.S	Cover Plates Temporary	EACH

Payment is full compensation for furnishing, installing, and removing the cover plates.

The steel plates shall become the property of the contractor when no longer needed in the contract work.

stp-611-006 (20151210)

156. stp-611-010 Pipe Grates, Item 611.9800.S.

A Description

This special provision describes providing pipe grates on the ends of pipes.

B Materials

Furnish steel conforming to the requirements of standard spec 506.2.2.1. Furnish steel pipe conforming to the requirements of standard spec 506.2.3.6.

Furnish pipe grates galvanized according to ASTM A123.

Furnish angles and brackets galvanized according to ASTM A123.

Furnish required hardware galvanized according to ASTM A153.

C Construction

Repair pipes, rods, angles and brackets on which the galvanized coating has been damaged according to the requirements of AASHTO M36M.

D Measurement

The department will measure Pipe Grates in units of work, where one unit is one grate, completed 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
611.9800.S	Pipe Grates	EACH

Payment is full compensation for furnishing and installing all materials; and for drilling and connecting grates to pipes.

stp-611-010 (20030820)

157. stp-611-015 Drain Slotted Vane, Item 611.9900.S.

A Description

This special provision describes providing slotted vane drain as the plans show conforming to standard spec 611 as modified in this special provision.

B (Vacant)

C Construction

Before encasing the pipe in concrete, cover the upper end of the slotted drain as the plans show, or as approved by the engineer.

Before construction operations adjacent to the slotted area of the slotted vane drain pipe, cover the slots on the top of the drain. Remove any material entering the pipe at the contractor's expense.

Exercise care to avoid damage to the slotted vane drainpipe. If any section of pipe is damaged or is unsatisfactory as determined by the engineer, replace the drainpipe at contractor's expense.

D Measurement

The department will measure Drain Slotted Vane in units of work, completed according to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
611.9900.S	Drain Slotted Vane	EACH

Payment is full compensation for furnishing all materials; hauling and placing the pipe; making connections to existing inlets; furnishing concrete masonry, end plug or cap; and cleaning out and restoring site of work.

stp-611-015 (20030820)

612-005 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Design Note: 1", 2", 3" thicknesses are available.

158. stp-612-005 Insulation Board Polystyrene, Enter Thickness-Inch, Item 612.0902.S.

A Description

This special provision describes furnishing and placing polystyrene insulation board as the plans show.

B Materials

Provide polystyrene insulation board that conforms to the requirements for Extruded Insulation Board, AASHTO Designation M230 as modified in this special provision.

Delete flammability requirement.

B.1 Certification

Before installation, obtain from the manufacturer a certification indicating compliance and furnish it to the project engineer.

C (Vacant)

D Measurement

The department will measure Insulation Board Polystyrene, Enter Thickness-Inch by area in square yards of work, completed 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
612.0902.S	Insulation Board Polystyrene, Enter Thickness-Inch	SY

Payment is full compensation for all excavation; and for furnishing and placing the insulation board.

stp-612-005 (20030820)

159. stp-613-010 Cable Barrier Type 1, Item 613.1100.S; Cable Barrier End Terminal Type 1 Item 613.1200.S.

A Description

This special provision describes providing socketed high-tension TL-fill in blank with appropriate Test Level (3 or 4). cable guard meeting the National Cooperative Highway Research Program (NCHRP) Report 350, Test Level fill in blank with appropriate Test Level (3 or 4)..

B Materials

Provide a cable barrier system that is on the approved product list for the county in which the system will be installed.

Provide a calibrated tension gauge to each county for the specific system installed in each county.

Provide one copy of video training material on the proper maintenance techniques and recovery of vehicles to each county for the specific system installed in each county. At a minimum, this training is to address, proper tension techniques, proper operation of calibrated tension gauge, proper repair techniques, and proper methods to removed vehicles entrapped in the cable barrier.

B.2 Design Requirements

Thirty days before installation provide the engineer with two sets of manufacturer prepared drawings, Wisconsin P.E. stamped calculations, documentation, notes, plan details, and construction specifications. Provide required information in a PDF format or other in electronic format that the department can review information.

Obtain prior approval from the Bureau of Project Development (Erik Emerson at (608) 266-2842) for all hardware substitutions before delivering the hardware on the project.

If soils information is not in the plan contact Enter Regional soils or project staff contact information. NOTE- If soils information is included in the plan, delete this entire sentence.

C Construction

Construct concrete as specified in standard spec 501.

Construct steel reinforcement as specified in standard spec 505.

Construct terminal units at each end of a run of cable guard as the plans show. The contractor may determine the location of anchors subject to the engineer's approval.

Tension the cable according to the manufacturer's recommendations at the time of installation, and then check and adjust approximately three weeks after installation. If system is not maintaining proper tension, adjust tension and return three weeks later. Provide engineer documentation of date, time, location, tension value, and who checked the tension for each barrier run.

Use only one-half the available adjustment in each turnbuckle or tension adjustment connection to achieve manufacture's recommend tension values.

Certify that the installation was done according to manufacturer's recommendations and the plan requirements.

The engineer will allow the contractor to open the roadway to traffic or remove traffic control devices if concrete attains manufacture's compressive strength. Without compressive strength information, the engineer may allow the contractor to remove traffic control devices after 14 equivalent curing days. Equivalent curing days are defined in standard spec 415.3.

D Measurement

The department will measure Cable Barrier Type 1 by the linear foot, acceptably completed, measured from terminal to terminal and rounded to the nearest linear foot.

The department will measure Cable Barrier End Terminal Type 1 as each individual terminal, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
613.1100.S	Cable Barrier Type 1	LF
613.1200.S	Cable Barrier End Terminal Type 1	EACH

Payment is full compensation for designing and providing cable barrier end terminal or cable barrier.

stp-613-010 (20170615)

Small animal fencing used as a barrier to prevent small animals from entering travel lanes or to funnel them into animal crossings.

160. stp-616-005 Fencing Small Animal, Item 616.0120.S.

A Description

This special provision describes providing small animal fencing to prevent small animals from entering travel lanes or to funnel them into animal crossings. Conform to standard spec 616 as modified in this special provision.

B Materials

Furnish type 304 welded stainless steel-mesh made in the U.S. If stainless steel is available and made in the U.S. then use stainless; if not available, document and substitute appropriately. The steel-mesh shall have a minimum wire diameter of 0.047 inches (18-gauge) and a maximum opening width of 1/2 inch. Furnish posts, fittings, and fasteners that meet the requirements of standard spec 616.2.2 Woven Wire Fence Materials.

C Construction

Attach the steel-mesh fence to the bottom of woven wire fence with wire fasteners or staples that conform to standard spec 616.2.2.

In upland areas, trench and backfill the steel mesh to a minimum depth of 6 inches. In wetlands, install the fencing to a depth of 6 inches below the waterline. A minimum of 18 inches of the steel mesh must remain above the ground or water, running parallel with the woven wire fence.

Fasten the steel mesh to the woven wire fence with fasteners. At each end of the small animal fence, construct a turnaround with the same steel mesh material (see construction details); install the turnaround so that it directs small animals back to the fenced area, according to the plan details. Size the opening of the turnaround appropriately; larger animals require a larger turnaround area.

D Measurement

The department will measure Fencing Small Animal in length by the linear foot, including the entire length of the turnarounds, 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
616.0120.S	Fencing Small Animal	LF

Payment is full compensation for clearing and grubbing the fence line; for excavating for, and trenching in, the fencing; for furnishing and setting posts; for furnishing and erecting all fencing components; for removing and properly disposing of all debris, excess excavation and surplus material. Payment for the woven wire fence will be made under the appropriate bid item.

stp-616-005 (20110930)

161. stp-616-025 Fence Temporary, Item 616.0600.S.

A Description

This special provision describes providing and removing temporary fencing at the locations the plans show and as the engineer directs.

B (Vacant)

C Construction

Construct fence to the minimum strength and height required to contain livestock, as approved by the engineer.

D Measurement

The department will measure Fence Temporary in place by the linear foot from end posts, center to center, along the ground line.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
616.0600.S	Fence Temporary	LF

Payment is full compensation for furnishing all materials; erecting posts and fence; and for removing and disposing of fencing.

stp-616-025 (20101008)

162. stp-616-030 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)

163. stp-616-035 Gates Wood Single Leaf, Enter length FT, Item 616.0350.S.

A Description

This special provision describes providing wood gates according to the plan details.

B Materials

Furnish structural lumber and timber conforming to standard spec 507. Treat structural lumber and timber by the pressure process conforming to standard spec 507.2.2.6, except do not use creosote-coal tar or pentachlorophenol.

Furnish bolts, nuts and washers according to ASTM F3125.

Furnish hardware and miscellaneous steel plates conforming to ASTM A36M. Paint miscellaneous steel plates with a catalyzed (two component) black epoxy paint over a zinc rich primer conforming to standard spec 517.

Furnish zinc coated bolt hooks manufactured by Stanley, Lawrence Brothers, or an approved equal.

C (Vacant)

D Measurement

The department will measure Gates Wood Single Leaf, Enter length FT as each gate, 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
616.0350.S	Gates Wood Single Leaf, Enter length FT	EACH

Payment is full compensation for providing gates.

stp-616-035 (20030820)

164. stp-616-040 Gates Wood Double Leaf, Enter length FT, Item 616.0352.S.

A Description

This special provision describes providing wood gates according to the plan details.

B Materials

Furnish structural lumber and timber conforming to standard spec 507. Treat structural lumber and timber by the pressure process conforming to standard spec 507.2.2.6, except do not use creosote-coal tar or pentachlorophenol.

Furnish bolts, nuts and washers according to ASTM F3125.

Furnish hardware and miscellaneous steel plates conforming to ASTM A36M. Paint miscellaneous steel plates with a catalyzed (two component) black epoxy paint over a zinc rich primer conforming to standard spec 517.

Furnish zinc coated bolt hooks manufactured by Stanley, Lawrence Brothers, or an approved equal.

C (Vacant)

D Measurement

The department will measure Gates Wood Double Leaf, Enter length FT as each gate, 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
616.0352.S	Gates Wood Double Leaf, Enter length FT	EACH

Payment is full compensation for providing gates.

stp-616-040 (20030820)

165. stp-616-045 Gates Pipe Single Leaf, Enter length FT, Item 616.0360.S.

A Description

This special provision describes providing single leaf pipe gates as the plan details show.

B Materials

Furnish black, round steel pipe conforming to ASTM A53, type F.

Furnish hot-rolled round bar and miscellaneous steel plates conforming to ASTM A36.

Furnish grade A, A-FA, A-S, A-T, A-IS, A-IP, or A-IT concrete conforming to standard spec 501.2 as modified in standard spec 716. Provide QMP for class II ancillary concrete as specified in standard spec 716.

Furnish zinc-coated bolts, nuts, and washers.

B.1 Paint

Provide one of the following paint systems:

- Rust-Oleum 9300 System Heavy-Duty Epoxy Finish with a 9334 Zinc Rich Primer.
- Sherwin Williams Hi-Solids Catalyzed Epoxy Finish with a Zinc Rich Primer.
- Devoe Tru-Glaze-3 Epoxy Gloss Coating with a Zinc Rich Primer.

The engineer will determine the paint color.

C Construction

After fabrication of the entire pipe gate, including hinge and locking posts, abrasive blast clean the gate to the requirements of Grade SSPC-SP-10 as specified by the Steel Structures Painting Council.

Give all metal components two coats of epoxy paint over a zinc rich primer conforming to standard spec 517.

Shop apply the primer and first coat. Field apply second finish coat after erection of gate.

D Measurement

The department will measure Gates Pipe Single Leaf, Enter length FT as each gate, 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
616.0360.S	Gates Pipe Single Leaf, Enter length FT	EACH

Payment is full compensation for providing gates; for concrete; and for painting.

stp-616-045 (20150630)

166. stp-616-050 Fence Track Clearance, Item 616.0800.S.

A Description

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

B Materials

Provide notched conventional metal "T" or "U" shaped fence posts.

Provide fence fabric that meets 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 diamond mesh
Service Temperature:	-60° F to 200° F (ASTM D648)
Tensile Yield:	Avg. 2000 lbs per 4 ft width (ASTM D638)
Ultimate Yield:	Avg. 2900 lbs per 4 ft width (ASTM D638)
Elongation at Break (%):	Greater than 100% (ASTM D638)
Chemical Resistance:	Inert to most chemicals and acids

C Construction

C.1 Track Clearance Fences

Erect track clearance fences before construction work Enter distance feet from the centerline of the track and on ***Select from drop-down.*** running continuously from the points located Enter distance feet beyond the edges of overpass structures.

Before driving posts, arrange with the railroad company and utility owners to have any buried signal cable, fiber optic lines or other underground facilities located and marked where the fence is to be placed. Place the posts to avoid underground facilities.

Drive posts into the ground 12 to 18 inches, and space posts at 7.0 feet. Secure the fence at each post with a minimum of three wire ties. Weave tension wire through the top row of strands to provide a top stringer to prevent sagging.

Overlap two rolls at a post and secure with wire ties.

Where buried facilities or subsurface conditions do not permit driving posts, support posts by some other means that will provide stability comparable to driven posts.

D Measurement

The department will measure Fence Track Clearance in length by the linear feet along the base of the fence, center to center of posts.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
616.0800.S	Fence Track Clearance	LF

Payment is full compensation for underground facility locating and marking services by the railroad and utility owners; furnishing and installing fence and posts; maintaining the fence and posts in satisfactory condition at all times; and for removing and disposing of fence and posts at the completion of the project.

stp-616-050 (20050502)

628-050 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

To be used with CADDS Stone or Rock Ditch Check Details. Bid Geotextile Fabric Type SAS separately if used. Specify the type of excavation to be used for removal of sediment. See FDM Chap 10-10-25 for guidance on applications. If stone or rock ditch checks are to remain permanently, make sure they are outside the clear zone or are sloped no steeper than 6:1 on both sides.

167. stp-628-050 Stone or Rock Ditch Checks, Item 628.7515.S.

A Description

This special provision describes furnishing and installing stone or rock ditch checks as the plans show or as the engineer directs.

B Materials

Provide materials conforming to size requirements for size no. 2 coarse aggregate for concrete masonry or riprap according to the standard spec 501.2.5.4.5. Railroad ballast or breaker run stone conforming to the following applicable gradations may also be used:

Railroad Ballast

Sieve Size	Percent by Weight Passing
2 Inch	100
1 Inch	20 – 55
3/8 Inch	0 -5

Breaker Run Stone

Sieve Size	Percent by Weight Passing
5 Inch	100
1½ Inch	0 – 50
3/8 Inch	0 - 5

Incorporate stone or rock in the ditch checks that is hard, sound, and durable, and meets the approval of the engineer.

C Construction

Place stone or rock ditch checks immediately after shaping of the ditches or slopes is completed. Place stone or rock ditch checks at right angles to the direction of flow and construct to the dimensions and according to the details the plans show.

Remove sediment from behind the stone or rock ditch checks when it has accumulated to one half of the original height of the dam.

D Measurement

The department will measure Stone or Rock Ditch Checks in volume by the cubic yard of material incorporated in the work.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
628.7515.S	Stone or Rock Ditch Checks	CY

Payment is full compensation for furnishing, producing, crushing, loading, hauling, placing, and shaping and maintaining Stone or Rock Ditch Check.

The quantity of sediment removed shall be multiplied by a factor of ten and paid for as Enter type of excavation Excavation.

stp-628-050 (20170615)

632-005 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

This STSP is required when bid item 632.9101 Landscape Planting Surveillance and Care Cycle is used.

168. stp-632-005 Landscape Planting Surveillance and Care Cycles.

If the care specialist fails to perform any of the required care cycles as specified in standard spec 632.3.19.1, the department will assess daily damages in the amount of $Enter dollar amount for damages to cover the cost of performing the work with other forces. The department will assess these damages for each day the requirements of the care cycle remain incomplete, except when the engineer extends the required time period.

stp-632-005 (20070510)

169. stp-635-005 Sign Supports Shorten Structural Steel, Item 635.9010.S.

A Description

This special provision describes removing, shortening, and re-installing structural steel sign supports conforming to standard spec 635 as modified in this special provision.

B Materials

Furnish materials conforming to standard spec 635.2.

C Construction

Remove existing Type I sign from structural steel sign supports. Place Type I sign in a secure location while work is being performed. Remove the structural steel sign supports from their foundations. Shorten the structural steel sign supports to the length specified in the plans by cutting perpendicular to the length of the support. Remove burrs from cut edges. Clean cut areas and repair damaged zinc coating conforming to standard spec 635.3.4. Re-install structural steel sign supports on bases and replace base bolts to the torques specified on the A3-1 sign plate. Install or re-install Type I sign on structural steel sign supports.

D Measurement

The department will measure Shorten Structural Steel Sign Supports as each individual sign support, 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
635.9010.S	Sign Supports Shorten Structural Steel	EACH

Payment is full compensation for removing the existing Type I sign and existing structural steel sign support; cutting, cleaning, and repairing damaged zinc coating; re-installing structural steel sign supports and Type I signs; and furnishing and installing new base connection bolts and aluminum extrusion connecting hardware. Replacement of any sign panel hardware broken during the course of this work is incidental to this item.

stp-635-005 (20090901)

170. stp-635-010 Sign Supports Replacing Base Connection Bolts Legacy System, Item 635.9020.S.

A Description

This special provision describes the replacement of base connection bolts for structural steel sign supports (legacy systems). Legacy systems can be identified by the lack of splice plates in the I-Beams beneath a sign.

B Materials

Furnish materials conforming to standard spec 635.2 and as follows:

POST SIZE	BOLT DIAMETER	BOLT LENGTH
W10"X12.0 #/FT.	3/4"	3 3/4"
W12"X16.0 #/FT.	7/8"	4 3/4"
W12"X19.0 #/FT.	7/8"	5"
W12"X22.0 #/FT.	7/8"	5"
W12"X26.0 #/FT.	1"	5"

C Construction

Construct conforming to standard spec 635.3.2 and as follows:

POST SIZE	BOLT DIAMETER	BOLT LENGTH	TORQUE
W10"X12.0 #/FT.	3/4"	3 3/4"	75#-FT.
W12"X16.0 #/FT.	7/8"	4 3/4"	85#-FT.
W12"X19.0 #/FT.	7/8"	5"	85#-FT.
W12"X22.0 #/FT.	7/8"	5"	85#-FT.
W12"X26.0 #/FT.	1"	5"	90#-FT.

D Measurement

The department will measure Sign Supports Replacing Base Connection Bolts Legacy System as each individual sign location, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
635.9020.S	Sign Supports Replacing Base Connection Bolts Legacy System	EACH

Payment is full compensation for providing new bolts for each contract designated sign; and repairs due to any damage done during the course of this work.

stp-635-010 (20200629)

171. stp-636-010 Foundation Drilling Enter Diameter-Inch Diameter, Item 636.0050.S.

A Description

This special provision describes drilling holes for the H pile posts for retaining walls.

B (Vacant)

C Construction

Submit the proposed method for foundation drilling before beginning construction.

Drill holes to the diameter and depth the plans show. If necessary, use casing or alternative engineer-approved methods to maintain an open hole. If bentonite or other slurry is used to maintain an open hole, prevent spillage of the slurry into adjacent waterways. Locate the holes within the following tolerances:

Horizontal Location:	3 inches
Vertical Location:	1 inch
Vertical Alignment:	1/8 inch per foot

D Measurement

The department will measure the Foundation Drilling Enter Diameter-Inch Diameter by the linear foot, acceptably completed, measured from the bottom of the hole to the top of the foundation footing.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
636.0050.S	Foundation Drilling Enter Diameter-Inch Diameter	LF

Payment is full compensation for drilling holes; for furnishing casing or alternative drilling methods; and, if rock is encountered, for coring rock.

stp-636-010 (20140630)

172. stp-638-010 Blue Specific Service Signs.

Add the following to standard spec 638.3.4:

Do not remove or move blue specific service signs or their associated posts. Specific service signs are signs with logos that identify commercial entities providing gas, food, lodging, camping, or attractions. A separate contractor, Interstate Logos - Wisconsin, is responsible for these signs. Contact Interstate Logos - Wisconsin at (844) 496-9163 a minimum of 14 calendar days in advance to coordinate removing, moving, or re-installation of these signs.

The contractor is responsible for damage done to these signs due to contractor operations.

stp-638-010 (20150630)

173. stp-640-001 Ground Water Monitoring Well.

Others have constructed a groundwater monitoring well at Station Enter Station #.

This well is located within the construction area of the proposed containment cell. Exercise care and do not disturb or damage the well. Any cost of repair or replacement of a well disturbed or damaged by the contractor will be deducted from compensation due, or which may become due, the contractor under the contract.

stp-640-001 (20050901)

174. stp-640-005 Aggregate for Seal Coat Cover.

Add the following to standard spec 460.2:

Industrial byproduct, (coal ash, foundry process waste or other non-hazardous solid waste) may be used to produce seal coat aggregate provided it meets the characterization requirements for category 1 or category 2 industrial byproducts set forth in NR538.08, Wisconsin Administrative Code.

At the time of delivery of the industrial byproduct to the project, furnish to the engineer, a Certificate of Compliance that certifies to which category the industrial by-product conforms.

stp-640-005 (20150630)

Designer needs to supply name of byproduct material, name of plant where it is being generated and a contact person at the generator.

175. stp-640-010 Placing Industrial Enter byproduct name, Item 640.0200.S.

A Description

This special provision describes constructing portions of embankments with Enter byproduct name conforming to standard spec 207 and the plan details.

B Materials

The material to be placed is Enter byproduct name furnished at no charge to the contractor by Enter generator.

Obtain samples of the Enter byproduct name by contacting Enter Name and Telephone number.

C Construction

Exercise caution not to disturb or damage the groundwater monitoring well that was constructed by others at Station Enter Station #.

Minimize dust dispersion until completion of the clay cap and sidewalls.

D Measurement

The department will measure Placing Industrial Enter byproduct name in volume by the cubic yard, in place.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
640.0200.S	Placing Industrial Enter byproduct name	CY

Payment is full compensation for placing, shaping, and compacting the industrial byproduct.

Loading and hauling the Enter byproduct name from Enter location to the site of the work will be paid for separately.

stp-640-010 (20030820)

640-016 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

The Pond Liner Clay special provision should be used for detention basins liners (if appropriate). Typically, the thickness of the clay is 1 foot with an additional 1 foot of cover soil, with the top 4 inches being topsoil. The frequency of testing is dependent upon the quantity of low permeable clay to be used.

Detention Basins: The frequencies shown in Table 1 should be sufficient. Typically, the volume of low permeable clay in a detention basin is less than 1,000 cubic yards. The designer can adjust the testing frequency based upon project considerations.

176. stp-640-016 Pond Liner Clay, Item 640.1303.S.

A Description

This special provision describes providing low permeable clay in areas the plans show.

B Materials

For each source, before excavating and hauling the low permeable clay to the project, submit the results of the laboratory tests described in Table 1. The laboratory testing shall document that the clay from the source meets or exceeds the requirements.

The sample for the hydraulic conductivity test shall be remolded clay at a minimum dry density of 95% of the maximum dry density as determined by the Standard Proctor test AASHTO T-99 and at a moisture content required to achieve the required hydraulic conductivity, but with a minimum moisture content at or above the optimum moisture content as determined in the Standard Proctor test AASHTO T-99. Conduct the laboratory source testing at the frequency listed in Table 1. Submit the test results to the engineer for review, two weeks before construction.

C Construction

C.1 Low Permeable Clay Placement

C.1.1 Subgrade

Compact the subgrade to a minimum density as defined in standard spec 207.3.6.2, Standard Compaction, or as otherwise specified in the contract requirements.

C.1.2 Erosion Protection

Do not place the low permeable clay until after all adjacent site grading has been completed and only after silt fence has been installed completely around the area of low permeable clay placement.

C.1.3 Low Permeable Clay Placement

After the fine grading is complete, place and compact low permeable clay in completed 6-inch lifts. Place each lift of low permeable clay in one continuous lift. See plans for low permeable clay construction limits. Measure the thickness of the low permeable clay the plans show perpendicular to the surface.

Notify the engineer at least three days before starting construction of low permeable clay.

Table 1

Reference	Number	Test Title	Requirements	Testing Frequency	
				Screening	QA/QC[12]
AASHTO[1]	T99-01	Moisture –Density Relationships of Soils Using a 2.5-kg (5.5 lb) Rammer a 305 mm (12-in.) Drop (Standard Proctor)	NA[11]	1/source	NA
AASHTO	T-88-00	Particle Size Analysis of Soils	P200[3] $\geq$ 50%	2/source	1/lift
AASHTO	T-89-02	Determining the Liquid Limit of Soils	LL[4] $\geq$ 22%	2/source	1/lift
AASHTO	T-90-00	Determining the Plastic Limit and Plasticity Index of Soils	PI[5] $\geq$ 12%	2/source	1/lift

AASHTO	T310-03	In-Place Density and Moisture Content of Soils and Soil-Aggregates by nuclear Methods (Shallow Depth)	DD[6] $\geq$ 95% of the MDD[7]	NA	100'x100' Grid/lift
ASTM[2]	D5084-03	Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter	K[8] $\leq 1 \times 10^{-7}$ cm/sec	1/source[9]	1/site[10]

Notes:

1. AASHTO = American Association of State Highway and Transportation Officials
2. ASTM = American Society of Testing and Materials
3. P200 = Percent by weight passing the #200 sieve (%)
4. LL = Liquid Limit (%)
5. PI = Plasticity Index (%)
6. DD = Dry Density (pcf)
7. MDD = Maximum Dry Density (pcf) as determined by the Standard Proctor Test
8. K = Hydraulic Conductivity (cm/sec)
9. The sample for the test shall be remolded at a minimum dry density of 95% of the maximum dry density as determined by the Standard Proctor test and at a moisture content required to achieve the required hydraulic conductivity, but with a minimum moisture content at or above the optimum moisture content as determined in the Standard Proctor test.
10. An undisturbed sample from a thinned walled sampler (Shelby tube)
11. NA = Not applicable
12. QA/QC = Quality Assurance / Quality Control

Compact the low permeable clay to a minimum of 95% Standard Proctor AASHTO T-99 Maximum Dry Density with a footed compaction equipment having feet at least as long as the loose lift height. As needed, clay shall be disked or otherwise mechanically processed before compaction to break up clods and allow moisture content adjustment. Clod size shall be no greater than 4 inches. All compaction equipment utilized shall have a minimum static weight of 30,000 pounds.

Provide all equipment necessary to adjust low permeable clay to the proper moisture content for compaction.

Make sufficient number of passes of the compaction equipment over each lift of clay to ensure complete remolding of the clay.

Do not proceed with placement of additional lifts until all required low permeable clay testing and documentation has been completed for the previous lift.

During placement of the low permeable clay the minimum moisture content shall be as defined by the testing performed in the source evaluation and with the following limits:

- No drier than the optimum moisture content as determined by the Standard Proctor test.

If the in-place low permeable clay fails to meet the requirements of Table 1, then remove and replace or rework any portion of the low permeable clay not meeting the project requirements until project specifications are met. There shall be no compensation for removing, replacing and reworking low permeable clay not meeting the requirements in Table 1.

C.1.4 QA/QC Testing of the Low Permeable Clay

The department will perform the QA/QC testing at the frequency shown in Table 1. The department will record the thickness of low permeable clay on a 100 foot x 100 foot grid pattern.

Provide the following:

- Access for on-site testing, inspection, and documentation.
- Machinery required to grade/blade density test locations.
- Machinery required to collect undisturbed clay samples (i.e., with Shelby tubes).
- Replace and recompact clay material removed for testing purposes.

D Measurement

The department will measure Pond Liner Clay in volume by the cubic yards, 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
640.1303.S	Pond Liner Clay	CY

Payment is full compensation for dewatering areas of site where the low permeable clay is to be placed; for furnishing, placing and compacting the low permeable clay; and for performing all tests.

stp-640-016 (20130615)

640-017 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

The Clay Cover special provision should be used in conjunction with High Volume Industrial Byproducts placement and is regulated by NR 538.10 (6) and (7). The required thickness of the clay is 2-feet, with a 2 foot layer of soil placed above the clay with the top 4 inches being topsoil. The frequency of testing is dependent upon the quantity of low permeable clay that is proposed in the plans. The values are shown in NR 538 (6)(d) 1,2,3.

177. stp-640-017 Clay Cover, Item 640.1305.S.

A Description

This special provision describes providing low permeable clay in areas the plans show.

B Materials

For each source, before excavating and hauling the low permeable clay to the project, submit the results of the laboratory tests described in Table 1. The laboratory testing shall document that each clay type from the source meets or exceeds the requirements.

The sample for the hydraulic conductivity test shall be remolded clay at a minimum dry density of 95% of the maximum dry density as determined by the Standard Proctor test ASTM D698 and at a moisture content required to achieve the required hydraulic conductivity, but with a minimum moisture content at or above the optimum moisture content as determined in the Standard Proctor test ASTM D698. Conduct the laboratory source testing at the frequency listed in Table 1. Submit the test results to the engineer for review, two weeks before construction.

C Construction

C.1 Low Permeable Clay Placement

C.1.1 Subgrade

Compact the subgrade to a minimum density as defined in standard spec 207.3.6.2, Standard Compaction, or as otherwise specified in the contract requirements.

C.1.2 Erosion Protection

Do not place the low permeable clay until after all adjacent site grading has been completed and only after silt fence has been installed completely around the area of low permeable clay placement.

C.1.3 Low Permeable Clay Placement

After the fine grading is complete, place and compact low permeable clay in completed 6-inch lifts. Place each lift of low permeable clay in one continuous lift. See plans for low permeable clay construction limits. Measure the thickness of the low permeable clay the plans show perpendicular to the surface.

Notify the engineer at least three days before starting construction of low permeable clay.

Table 1

Reference	Number	Test Title	Requirements	Testing Frequency		
				Screening	QA/QC[3]	
					Top Cover	Sideslopes
ASTM[1]	D698	Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort	NA2	1/source	1/source	1/source
ASTM	D1140	Standard Test Methods for Amount of Material in Soils Finer Than the No. 200 (75-um) Sieve	Per NR 5384	2/source	1/2,220 cy per lift5	1/3,330 cy per lift
ASTM	D422	Standard Test Method for Particle-Size Analysis of Soils	Per NR 538	2/source	1/2,220 cy per lift	1/3,330 cy per lift
ASTM	D4318	Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.	Per NR 538	2/source	1/2,220 cy per lift	1/3,330 cy per lift
ASTM	D2487	Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)	Per NR 538	2/source	1/2,220 cy per lift	1/3,330 cy per lift
ASTM	D2922	Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)	Per NR 538	NA	200'x200' Grid/lift	240'x240' Grid/lift
ASTM	D5084	Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter	Per NR 538	1/source6	1/6,660 cy per lift7	1/10,000 cy per lift7

Notes:

1. ASTM = American Society of Testing and Materials.
2. NA = Not applicable.
3. QA/QC = Quality Assurance / Quality Control.
4. NR 538 = Wisconsin Department of Natural Resources regulations Chapter NR 538 Beneficial Use of Industrial Byproducts.
5. A lift shall not exceed 8 inches.
6. The sample for the test shall be remolded at a minimum dry density of 95% of the maximum dry density as determined by the Standard Proctor test and at a moisture content required to achieve the required hydraulic conductivity, but with a minimum moisture content at or above the optimum moisture content as determined in the Standard Proctor test.
7. An undisturbed sample from a thinned walled sampler (Shelby tube).

Compact the low permeable clay to a minimum of 95% Standard Proctor ASTM D698 Maximum Dry Density with a footed compaction equipment having feet at least as long as the loose lift height. As needed, clay shall be disked or otherwise mechanically processed before compaction to break up clods and allow moisture content adjustment. Clod size shall be no greater than 4 inches. All compaction equipment utilized shall have a minimum static weight of 30,000 pounds.

Provide all equipment necessary to adjust low permeable clay to the proper moisture content for compaction.

Make sufficient number of passes of the compaction equipment over each lift of clay to ensure complete remolding of the clay.

Do not proceed with placement of additional lifts until all required low permeable clay testing and documentation has been completed for the previous lift.

During placement of the low permeable clay the minimum moisture content shall be as defined by the testing performed in the source evaluation and with the following limits:

- No drier than the optimum moisture content as determined by the Standard Proctor test ASTM D698.

If the in-place low permeable clay fails to meet the requirements of Table 1, then remove and replace or rework any portion of the low permeable clay not meeting the project requirements until project specifications are met. There shall be no compensation for removing, replacing and reworking low permeable clay not meeting the requirements in Table 1.

C.1.4 QA/QC Testing of the Low Permeable Clay

The department will perform the QA/QC testing at the frequency shown in Table 1. The department will record the thickness of low permeable clay on a 200 foot x 200 foot grid pattern for the top cover and sideslopes.

Provide the following:

- Access for on-site testing, inspection, and documentation.
- Machinery required to grade/blade density test locations.
- Machinery required to collect undisturbed clay samples (i.e., with Shelby tubes).
- Replace and recompact clay material removed for testing purposes.

D Measurement

The department will measure Clay Cover in volume by the cubic yards, 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
640.1305.S	Clay Cover	CY

Payment is full compensation for furnishing, placing and compacting the low permeable clay; and for performing all tests.

stp-640-017 (20130615)

Designer needs to supply name of byproduct material, the generator and a contact person at the generator.

178. stp-640-025 Hauling Industrial Enter byproduct name, Item 640.0250.S.

A Description

This special provision describes transporting Enter byproduct name from Enter location to the site of the work.

B (Vacant)

C Construction

The material to be hauled is Enter byproduct name produced by Enter generator. The Enter byproduct name is furnished at no cost to the contractor and is located at Enter location.

Samples of Enter byproduct name can be obtained by contacting Enter Name and Telephone number at Enter generator.

Provide leak proof vehicles to haul the Enter byproduct name material and provide vehicles with covers to prevent spillage. If any spillage does occur, the operator shall immediately return the spilled materials to the vehicle and shall properly clean the spill area.

Remove any Enter byproduct name spilled onto haul roads at the end of hauling operations each day and when rain is imminent.

D Measurement

The department will measure Hauling Industrial Enter byproduct name in tons.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
640.0250.S	Hauling Industrial Enter byproduct name	TON

Payment is full compensation for loading and hauling.

stp-640-025 (20030820)

179. stp-640-030 Maintenance of Cells Enter byproduct name, Item 640.0270.S.

A Description

This special provision describes maintaining Enter byproduct name cells during non-working hours to minimize the dispersion of dust. Maintain Enter byproduct name cells from the start of construction until completion of the clay cap and sidewalls.

B (Vacant)

C Construction

Apply water or take other action necessary to minimize the dispersion of dust during maintenance of the Enter byproduct name cells.

Provide adequate equipment and forces to effectively and expeditiously maintain the Enter byproduct name cells during non-working hours. Supply the name of the person responsible for maintenance of the Enter byproduct name cells during non-working hours to the engineer. The designated person must be able to reach the work site within one hour of being notified.

D Measurement

The department will measure Maintenance of Cells Enter byproduct name by the hour, which shall be the number of person hours spent maintaining the Enter byproduct name cells after construction operations have ceased for the day and during holidays, weekends and other temporary suspensions of construction operations. Documentation of the hours shall be by payroll submittals.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
640.0270.S	Maintenance of Cells Enter byproduct name	HR

Payment is full compensation for furnishing, hauling and applying materials including dust abatement materials.

stp-640-030 (20030820)

180. stp-640-035 Basin Lysimeter, Item 640.0400.S.

A Description

This special provision describes providing basin lysimeters at locations the plans show, or as the engineer directs, and conforming to the plan details.

B Materials

Furnish materials that will be incorporated into the work that meet the following requirements.

Furnish polyvinyl chloride (PVC) pipe, both perforated and unperforated, used as part of the drainage, collection, and sampling system, conforming to AASHTO M278.

Furnish geotextile fabric, Type DF conforming to the requirements of standard spec 645.2.4, Schedule A.

Filler stone conforming to the requirements of standard spec 501.3.6.4, Size No. 2 aggregates produced from crushed concrete shall not be used for this work.

Furnish clay barrier material meeting the following requirements:

1. A classification of CL or CH under the Unified Soils Classification system.
2. A permeability of 1 x 10^{-7} cm/sec when compacted to 95% of maximum dry density as determined by AASHTO T-99.
3. An average liquid limit of 25% of greater with no value less than 20% when tested according to ASTM D4318.
4. An average plasticity index of 12% of greater with no values less than 10% when tested according to ASTM D4318.
5. A minimum of 50% by weight that passes the No. 200 sieve.

Furnish material for geomembrane liner, geomembrane apron, geomembrane sleeve that meets the following requirements.

Material	Minimum Thickness (mil)	Specific Gravity/Density (pcf)
Polyvinyl chloride (PVC)	29.53 (ASTM D1593)	74.91 (ASTM D792)
High density polypropylene (HDPE)	39.37 (ASTM D5199)	58.68 (ASTM D1505)
Linear low density polypropylene (LLDPE)	39.37 (ASTM D5199)	58.68 (ASTM D1505)

Furnish components of the protective cover pipe with locking cap that are either steel or aluminum. Furnish steel cover pipe meeting the requirements of ASTM A53, Schedule 40. Furnish steel locking cap devices that are commercially manufactured and are compatible with the steel cover pipe. Furnish aluminum cover pipe meeting the requirements of ASTM B241, Alloy 6061-T6 or Alloy 6063-T6 and ANSI Schedule 40. Furnish aluminum locking cap devices that are commercially manufactured and are compatible with the aluminum cover pipe.

C Construction

Excavate for the Basin Lysimeter to the lines and grades shown on the plan. Tamp the finished excavation and hand rake to produce a smooth earth surface meeting the satisfaction of the engineer. Remove from the excavation all rocks clods, roots and other deleterious materials, which could prevent uniform placement of the clay barrier or damage the geomembrane liner. Place the clay barrier over the prepared surface and compact at or above optimum moisture content. Trim the surface of the clay barrier to produce a smooth, uniform surface free of rocks, clods, clumps, roots, and other deleterious materials.

The engineer shall approve the surface of the clay barrier before placement of the geomembrane liner. Provide geomembrane liner that is fabricated from approved material. Geomembrane liner shall meet the lines and dimensions shown on the plan. Provide geomembrane apron and geomembrane sleeves that are fabricated from the same material as supplied for the geomembrane liner and meet the dimensions and requirements shown on the plan. All seams required to fabricate or connect the geomembrane liner, geomembrane apron, or geomembrane sleeve to each other or the PVC collection pipe shall be either solvent welded or heat welded and shall comply with the manufacturer's instructions and recommendations. Repair any seams or welds exhibiting flaws, openings, or discontinuities as the engineer directs.

Place the geomembrane liner on the prepared and accepted clay barrier surface and fit into position. Anchor the outer perimeter of the geomembrane liner by burying it to a minimum depth of 1 foot in a prepared trench according to the plan details. Place the geotextile fabric, Type DF directly on the geomembrane liner and fit it into position. The geotextile fabric shall be one continuous piece of sufficient size and dimension to cover the geomembrane liner and encapsulate the filler stone in the manner detailed on the plan.

Install the PVC pipe collection, distribution and sampling system to the lines, grades, and dimensions shown on the plan. Solvent-glue all joints and connections in the pipe system to produce watertight seals. Openings made in the geomembrane liner and the geotextile fabric to permit installation of the collection and distribution pipe shall be of the minimum size necessary. Follow the connection details shown on the plan for installing the geomembrane apron and geomembrane sleeve, placing solvent or heat welds, and positioning of stainless steel clamps. The completed connection system shall be reviewed and approved by the engineer before placement of the filler stone.

Carefully place the filler stone to prevent damage and displacement of the collection pipe and the geomembrane liner. After filling the basin, level the stone and cover with the geotextile fabric, Type DF, as shown on the plan.

D Measurement

The department will measure Basin Lysimeters in units, completed according to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
640.0400.S	Basin Lysimeter	EACH

Payment is full compensation for all excavation; furnishing all materials and components; all fabricating, assembling, connecting, and making of all solvent or heat welds necessary to construct the unit; handling, placing, trimming, and finishing all materials; and for disposing of all surplus materials.

stp-640-035 (20080902)

181. stp-640-040 Head Monitoring Well, Item 640.0500.S.

A Description

This special provision describes providing head monitoring wells at locations the plans show or as the engineer directs. Document the work according to Subsection NR 507.14(1) and (5)(c) of the Wisconsin Administrative Code.

B Materials

Materials incorporated into the work shall meet the requirements of materials named and as herein specified.

Furnish well casing composed of polyvinyl chloride (PVC) pipe conforming to the requirements of ASTM D1784 and ANSI Schedule 40. Furnish well casing fittings formed from polyvinyl chloride (PVC) material and conforming to the requirements of ASTM D466.

Furnish well screen that is fabricated from polyvinyl chloride (PVC) pipe and conforms to the requirements of ASTM D1784 and ANSI Schedule 40. Furnish well screen that is factory slotted with 0.01-inch slots spaced at no more than 0.2 inch.

Furnish exposed protective cover pipe with locking cap assembly components that are composed of either steel or aluminum. Furnish steel cover pipe that meets the requirements of ASTM A53, Schedule 40. Furnish steel locking cap devices that are commercially manufactured and are compatible with the steel cover pipe. Furnish aluminum cover pipe that meets the requirements of ASTM B241, Alloy 6061-T6 or Alloy 6063-T6 and ANSI Schedule 40. Furnish aluminum locking cap devices that are commercially manufactured and are compatible with the aluminum cover pipe. Furnish locking cap devices that are capable of accepting a padlock with a minimum 9/32 inch diameter shackle.

Furnish flush mounted protective cover pipe assembly components that are composed of steel, cast iron, or aluminum. Furnish cover pipe lid with the words "Monitoring Well" clearly embossed or stamped on its outer surface. Furnish cover pipe that is either continuous or welded construction. Furnish cover pipe that has an exterior projecting flange or exterior projecting lugs.

Furnish expansion plugs with locking mechanisms that are fabricated from nylon, plastic, brass, or stainless steel; are fitted with "O" rings or gaskets; and form a watertight seal when installed and expanded against the PVC well casing. Furnish a locking mechanism that is constructed of corrosion resistant materials and is capable of accepting a padlock with a minimum 9/32 inch diameter shackle.

Furnish filter sand that is clean, well-graded, fine silica sand visibly free of clay, dust, micaceous matter, and organic matter; has a specific gravity of not less than 2.50; and is not more than 5% by weight of its content soluble in a 10% hydrochloric acid solution. Sand produced by crushing limestone dolomite, or other materials containing clay and/or materials that may adversely impact the performance of the head monitoring well shall not be used as filter sand. Furnish filter sand that has a Uniformity Coefficient (Cu) of not more than 1.5, and meets the following gradation requirements:

Sieve Size	Percent Passing
No. 40	96 – 100
No. 60	0 - 5

Furnish bentonite seal that consists of NSF certified bentonite granules, pellets, or chips of no more than 3/8 inch diameter.

C Construction

Install head monitoring wells at locations the plans show or as the engineer directs and conforming to the plan details.

Use only hollow stem augers, solid stem augers, or air rotary method drill techniques for installation of head monitoring wells. The drilling method selected shall permit the proper construction of the required diameter well. Do not use a drilling method that introduces oils, lubricants, or other contaminants into the borehole.

Join all well casing and well screen sections with flush threaded joints. Use casings, screen, and fittings that are free of deformation, damage, or flaws, or any other defect that may impact the performance of the completed well.

Place and center the well screen and well casing in the prepared borehole. Evenly place the filter sand to surround the well screen to the depth the plans show. Use a measuring device during filter sand placement to insure that the material is evenly placed and that bridging does not occur. If bridging is detected, tamp the filter sand into place to eliminate such bridging.

Install the bentonite seal over the placed filter sand to the dimensions the plans show. Place the bentonite seal material in lifts not exceeding 2 feet. Use a measuring device during bentonite placement to insure that the material is evenly placed around the well casing and that bridging does not occur. If bridging is detected, tamp the bentonite to eliminate such bridging. Hydrate each lift of the bentonite seal material before placement of the next lift.

Install the protective cover pipe of the type indicated along with other required protective devices as detailed on the plans. Do not place any bentonite seal between the protective cover pipe and the well casing. Place flush-mounted protective cover pipes at the elevation the plans show or as the engineer directs to prevent surface drainage into the cover pipe.

After satisfactory installation of the head monitoring well, clean and restore the site to meet the approval of the engineer. Do not leave excess drill cuttings at the site unless approved by the engineer.

D Measurement

The department will measure Head Monitoring Well as units, and the quantity measured for payment will be the number of individual head monitoring wells constructed, according to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
640.0500.S	Head Monitoring Well	EACH

Payment is full compensation for furnishing all materials and components; all drilling and drilling procedures necessary for well installation; installing all well components and materials; installing all protective devices and components; removing all excess drill cuttings and fluids; disposing of all surplus materials; cleaning and restoring the embankment and/or roadway surface after well completion; and completing and submitting all required forms and documentation.

stp-640-040 (20030820)

642-010 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Include on all projects with a field office. Modify the article as necessary to accommodate winter construction and/or freezing conditions.

182. stp-642-010 Field Office.

Add the following to standard spec 642:

For field offices without handwashing facilities, provide and maintain a portable handwashing station at every project field office. The station shall include a hands-free sink with foot pump-operated faucet, soap dispenser, paper towel dispenser, fresh water supply, and collection tank for gray water. Regularly service and maintain the handwashing station and all supplies as needed, and properly dispose of all materials. Costs associated with the handwashing station are incidental to the field office bid item.

stp-642-010 (20200629)

183. stp-643-010 Nighttime Work Lighting-Stationary.

A Description

This special provision describes furnishing portable lighting as necessary to complete nighttime work. Nighttime operations consist of work specifically scheduled to occur after sunset and before sunrise.

B (Vacant)

C Construction

C.1 General

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

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

1. Layout, including location of portable lighting – lateral placement, height, and spacing. Clearly show on the layout the location of all lights necessary for every aspect of work to be done at night.
2. Specifications, brochures, and technical data of all lighting equipment to be used.
3. The details on how the luminaires will be attached.
4. Electrical power source information.
5. Details on the louvers, shields, or methods to be employed to reduce glare.
6. Lighting calculations. Provide illumination with average to minimum uniformity ratio of 5:1 or less throughout the work area.
7. Detail information on any other auxiliary equipment.

C.2 Portable Lighting

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

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

C.3 Light Level and Uniformity

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

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

C.4 Glare Control

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

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

1. Aim tower-mounted luminaires, either parallel or perpendicular to the roadway, so as to minimize light aimed toward approaching traffic.
2. Aim all luminaires such that the center of beam axis is no greater than 60 degrees above vertical (straight down).

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

C.5 Continuous Operation

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

D (Vacant)

E Payment

Costs for furnishing a lighting plan, and for providing, maintaining, moving, and removing portable lighting, tower mounted lighting, and equipment-mounted lighting required under this special provision are incidental to the contract.

stp-643-010 (20100709)

184. stp-643-015 Truck or Trailer-Mounted Attenuator, Item 643.1055.S.

A Description

(1) This special provision describes protecting work operations with a truck or trailer-mounted attenuator (TMA).

B Materials

(1) Furnish and maintain a TMA conforming to NCHRP Report 350 test level 3 or to MASH crashworthiness criteria. Submit written certification from the manufacturer that the host vehicle/attenuator configuration provided conforms to crashworthiness criteria. Include the federal-aid reimbursement eligibility letter with that submittal.

(2) Provide a host vehicle and mount the attenuator conforming to the attenuator manufacturer's specifications. Provide the engineer a copy of the manufacturer's specifications and installation instructions.

C Construction

(1) Coordinate with the engineer at least 72 hours before its intended use so the engineer can determine if the work operation requires TMA protection.

(2) Position the attenuator at a manufacturer-recommended location in advance of a stationary work operation. Position and maintain the attenuator consistently at the manufacturer-recommended distance from a mobile work operation. Ensure that an operator stays with the host vehicle while protecting a mobile work operation.

D Measurement

(1) The department will measure Truck or Truck-Trailer-Mounted Attenuator by the day acceptably completed, measured to the 1/2-day based on the engineer-determined time the attenuator is required to protect work operations. The department will measure 4 or less hours per calendar day as a half day and over 4 hours as a full day.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
643.1055.S	Truck or Trailer-Mounted Attenuator	DAY

(2) Payment is full compensation for providing the portable attenuator, host vehicle, and operator.

stp-643-015 (20140630)

185. stp-643-030 Traffic Control Interim Lane Closure, Item 643.4100.S.

A Description

This special provision describes closing a freeway/expressway traffic lane.

B (Vacant)

C Construction

Install and reposition traffic control devices as required to close a traffic lane. Remove and return the devices to their previous configuration when the closure is no longer required.

D Measurement

The department will measure Traffic Control Interim Lane Closure as each individual reposition/return cycle, acceptably completed. The department will not measure additional moves or configuration changes as might be required solely to accommodate the contractor's operations.

The department will measure the closures by traffic lane and roadway. The department will not measure multiple closures in the same traffic lane on a project.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
643.4100.S	Traffic Control Interim Lane Closure	EACH

Payment is full compensation for closing and re-opening the affected traffic lane.

stp-643-030 (20170615)

643-035 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

The digital speed limit sign assembly (DSL) may be used in place of covering/uncovering the work zone speed limit sign at the contractor's option. See FDM 11-50-20.10.3 for guidance on determining if a DSL sign assembly is warranted for a project.

186. stp-643-035 Digital Speed Limit Sign Assembly.

A Description

This special provision describes providing, relocating, operating, maintaining, monitoring, and removing a digital speed limit (DSL) sign assembly at engineer-allowed locations, in place of covering/uncovering speed limit signs, at the contractor's option.

B Materials

Lay out signs according to the plans.

Use materials and methods specified in standard spec 637 to manufacture the sign.

Provide a digital speed display legend with a minimum of 18-inch-tall numbers.

Use posts from the FHWA list of accepted breakaway sign supports.

Provide a control unit that can be accessed remotely.

Provide a battery power supply with a solar powered charging system and a backup power source.

C Construction

C.1 General

Provide, install, maintain, operate and remove DSL sign assemblies and related signage.

Mount the sign so that the bottom is a minimum 7 feet above the roadway.

Install and operate DSL sign assembly 7 days in advance of the start of temporary speed declaration start date. Perform a successful field test for each sign.

Provide in-person training to the department on the use and operation of the field hardware and the website for the DSL sign assembly.

Ensure the system operates continuously when deployed on the project.

Provide a local specialist, to respond to emergency situations within 2 hours of being notified and who is equipped with sufficient resources to correct deficiencies in the system.

C.2 Programming

Program the DSL sign assembly to ensure the following operations are performed:

- The digital display portion automatically adjusts the brightness under varying light conditions to maintain legibility.
- Speed limit values shown on the digital display legend continuously displays without animation. Brief blanking may be experienced, up to 10 seconds, only during digital display legend user input utilizing the hard-wired hand control.
- The digital display changes between the original posted speed limit and the approved temporary speed limit when directed by the engineer.
- The system autonomously restarts in case of power failure in any part of the system.

D Measurement

The department will not measure the work performed under this special provision.

E Payment

The department will not pay directly for providing the digital speed limit assembly. Providing digital speed limit assembly shall be incidental to the Traffic Control Signs bid item.

stp-643-035 (20180628)

Contact the Bureau of Traffic Operations, Erin Schoon, at (414) 313-6841 for additional information and inclusion of a smart work zone system.

187. stp-643-040 Dynamic Late Merge System, Item 643.1100.S.

A Description

This special provision describes providing, repositioning, operating, maintaining, monitoring, calibrating, testing and removing a dynamic late merge system (DLMS) capable of measuring vehicular speeds at downstream sections of the roadway and activating the system.

B Materials

Provide DLMS components and software that is National Transportation Communications for ITS Protocol (NCTIP) compliant.

B.1 Portable Changeable Message Signs (PCMS)

Provide PCMS conforming to standard spec 643. Ensure each PCMS is integrated with a modem, and other equipment (e.g., automated system manager) mounted on it, and acts as a single device for communicating with similarly integrated devices and displaying real-time traffic conditions.

B.2 Portable Traffic Sensors (PTS)

Provide PTS that are nonintrusive and capable of capturing vehicle speed in mph. Integrate each sensor with a modem to communicate with the automated system manager (ASM).

B.3 Static Traffic Control Signs with Temporary Flashing Beacons (FBS)

Provide static traffic control signs with temporary flashing beacon signs conforming to standard spec 658.2(2) for Traffic Signal Faces. Ensure each FBS is integrated with a modem, and other equipment (e.g., automated system manager) mounted on it, and acts as a single device for communicating with similarly integrated devices and displaying real-time traffic conditions.

B.4 Automated System Manager (ASM)

Provide an ASM that assesses current traffic data captured by the PTS, determines the appropriate merging strategy based upon predetermined speed thresholds, and communicates appropriate messages to the motorists through the PCMS and FBS.

B.5 System Communications

Ensure DLMS communications meet the following requirements:

1. Perform required configuration of the DLMS communication system automatically during system initialization.
2. Communication between the server and any individual PCMS, FBS or PTS are independent through the full range of deployed locations, and do not rely upon communications with any other PCMS, FBS or PTS.
3. Incorporate an error detection/correction mechanism into the DLMS communication system to ensure the integrity of all traffic condition data and motorist information messages.

B.6 System Acceptance

Submit vendor verification to the engineer and Bureau of Traffic Operations (DOTBTOworkzone@dot.wi.gov) 14 calendar days before the pre-construction meeting that the system will adequately perform the functions specified in this special provision. Adequate verification includes past successful performance of the system, literature and references from successful use of the system by other agencies, and/or demonstration of the system.

Provide contact information for a designated representative responsible for monitoring the performance of the system and for making modifications to the operational settings as the engineer directs.

Provide all testing and calibration equipment.

C Construction

C.1 General

Install and reposition DLMS per plan or as the engineer directs. Provide plan to the engineer and Bureau of Traffic Operations (DOTBTOworkzone@dot.wi.gov) 14 calendar days before the pre-construction meeting.

PTS may be mounted on PCMS, FBS, arrow board or other trailer devices.

Install PTS at the following locations:

1. Place first PTS within the lane closure taper.
2. Place second PTS one half mile upstream of the lane closure taper.
3. Place third PTS 5,700 feet upstream of the lane closure taper.
4. Place fourth PTS 2 miles upstream of lane closure taper, if applicable.
5. Place any additional sensors even distances (in miles) upstream of the fourth PTS or as directed by the engineer.

Install the PCMS at the following locations, delineated by 5 drums:

1. Place first PCMS (PCMS #3) 200 feet upstream of the lane closure taper, offset to ensure downstream arrow board can be seen.
2. Place second PCMS (PCMS #2) approximately 3,100 feet upstream of the lane closure taper.
3. Place third PCMS (PCMS #1) 1 mile upstream of last FBS.

Install the FBS at the following locations, delineated by 5 drums:

1. Place first FBS (FBS #1) 5,700 feet upstream of the lane closure taper.
2. Place second FBS 2 miles upstream of the lane closure taper.
3. Place third FBS 3 miles upstream of the lane closure taper.
4. Place any additional FBS even distances (in miles) upstream of the third FBS or as directed by the engineer.

Number the devices in chronological order so they are visible from the shoulder with 6-inch white high reflective sheeting.

Provide technical personnel for all system calibration, operation, maintenance, and timely on-call support services.

Promptly correct the system within 24 hours of becoming aware of a deficiency in the operation or individual part of the system. A minimum of three days before deployment, place the DLMS and demonstrate to the department that the DLMS is operational.

Maintain the DLMS for the duration of the project or as identified in the plans. Ensure the system operates continuously (24 hours, 7 days a week) in the automated mode throughout the duration of the project.

Remove the system upon project completion.

C.2 Reports

Provide an electronic copy of a weekly summary report via email to the engineer. Ensure the report includes, at a minimum, the average speed per sensor, time in congestive state per sensor and number of triggers per day.

C.3 Meetings

Attend mandatory in-person pre-construction meetings with the department. Attend additional meetings as deemed necessary by the department. These meetings may be held in person or via teleconference, as scheduled by the department.

C.4 Programming

C.4.1 General

Program the DLMS to ensure that the following general operations are performed:

1. Provide a password protected login to the ASM, website and all other databases.
2. Automatic setting of the PCMS message sequences and FBS to reflect current traffic flow status updated every 60 seconds for a congestion message. Ensure to remove a congestion message when 180 seconds of average traffic speeds above the current level are observed, or utilize a customized frequency as determined by the engineer.
3. The DLMS operates as a unit where the PCMS activate at the same time for the same scenario.
    - PCMS #1, PCMS #2 and PCMS #3 shall all activate at the same time based on traffic speeds at the PTS one half mile upstream of the lane closure taper and at the PTS within the lane closure taper.

4. The ASM ensures that messages sent to the connected PCMS are synchronized so that all the messages on all the PCMS are for the same traffic conditions.
5. The FBS activate based on pre-determined speed thresholds from the next downstream sensor.
    - FBS #1 shall activate based on traffic speeds at the PTS within the lane closure taper or PTS one half mile upstream of the lane closure.
    - All other FBS in the DLMS shall activate based on traffic speeds at the next downstream PTS (e.g. FBS #2 should use PTS at/near FBS #1, FBS #3 should use PTS at/near FBS #2).
6. Provide real-time data from the ASM to a website with a full color mapping feature and refresh every 60 seconds. Make data on website available to the department at all times for the duration of the work zone activity. Ensure website includes at a minimum:
    - Vehicle speeds
    - PCMS messaging
    - FBS triggers
    - Device locations
7. Archive all traffic data and PCMS messages in a Microsoft Excel format with date and time stamps.
8. Configure the website to quantify system failures, which includes communication disruption between any devices in the system configuration, PCMS malfunctioning, FBS malfunctioning, PTS malfunction, loss of power, low battery, etc.
9. Provide default and advisory messages automatically based on traffic conditions.
10. Ensure the system autonomously restarts in case of any power failure.
11. Provide the department access to manually override PCMS messages for a user-specified duration, after which automatic operation will resume display of messages appropriate to the prevailing traffic conditions. Document all override messages.

C.4.2 System Operation Strategy

Arrange for the vendor/manufacturer to coordinate system operation, detection, trends/thresholds, and messaging parameters with the engineer.

The sequences that are a minimum requirement, but can be adjusted at the discretion of the engineer, are as follows:

Free Flow:

If the current PTS-measured speed with the lane closure taper or at one half mile from the lane closure taper is at or above 40 mph, display no lane use messages, and therefore allow traffic to resume typical early merge operation. PCMS #1 and PCMS #2 shall display nothing except for lighting the four corners (flashing caution mode) to show that it is on. PCMS #3 shall display a flashing arrow (flashing arrow merge mode) following applicable arrow board standards.

Congestion:

If the current PTS-measured speed near the lane closure tape is at or below 39 mph, the following two-phase messages shall be displayed on the upstream PMCS as shown below:

Point of merge (PCMS #3):

FRAME 1	FRAME 2
MERGE HERE	TAKE TURNS

Intermediate PCMS (PCMS #2):

FRAME 1	FRAME 2
STAY IN LANE	DO NOT MERGE

PCMS located beyond estimated maximum queue length for two-lane configuration (PCMS #1):

FRAME 1	FRAME 2
STOPPED TRAFFIC AHEAD	USE BOTH LANES

PCMS located beyond estimated maximum queue length for three-lane configuration (PCMS #1):

FRAME 1	FRAME 2
STOPPED TRAFFIC AHEAD	USE ALL LANES

FBS #1 shall flash if the current PTS-measured speed within the lane closure taper or at one half mile upstream of the lane closure taper is at or below 39 mph. All other FBS shall flash if the current PTS-measured speed at/near the next downstream PTS is at or below 39 mph.

C.5 Calibration and Testing

At the beginning of the project perform a successful field test and calibration at the DLMS location to verify the system is detecting accurate vehicle speeds, and accurately relaying the information to the ASM, PCMS and FBS.

Send email of successful calibration and testing to the engineer.

D Measurement

The department will measure Dynamic Late Merge System by the day, acceptably completed, measured as each complete system per roadway.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
643.1100.S	Dynamic Late Merge System	DAY

Payment is full compensation for providing, repositioning, operating, maintaining, monitoring, calibrating, testing, and removing the complete system consisting of PCMS, FBS, PTS, ASM, and system communications.

Failure to correct a deficiency to the PCMS, FBS, PTS, or ASM within 24 hours after notification from the engineer or the department will result in a one-day deduction of the measured quantity for each day in which the deficiency is not corrected.

Failure to correct the website within 24 hours after notification from the engineer will result in a 10% reduction of the day quantity for each day the website is down.

The engineer will have sole discretion to assess the deductions for an improperly working DLMS.

stp-643-040 (20200629)

Contact the Bureau of Traffic Operations, Erin Schoon, at (414) 313-6841 for additional information and inclusion of a smart work zone system.

188. stp-643-045 Portable Automated Real-Time Traffic Queue Warning System, Item 643.1200.S.

A Description

This special provision describes providing, repositioning, operating, maintaining, monitoring, calibrating, testing and removing a portable automated real-time traffic queue warning system (QWS) capable of measuring vehicular speeds at downstream sections of a roadway, and displaying the speed information on portable changeable message signs (PCMS) at upstream locations.

B Materials

Provide QWS components and software that is National Transportation Communications for ITS Protocol (NTCIP) compliant.

B.1 Portable Changeable Message Signs (PCMS)

Provide PCMS conforming to standard spec 643. Ensure each PCMS is integrated with a modem, and other equipment (e.g., automated system manager) mounted on it, and acts as a single “device” for communicating with similarly integrated “devices” and displaying real-time traffic condition information.

B.2 Portable Traffic Sensors (PTS)

Provide PTS that are nonintrusive and capable of capturing vehicle speed in mph. Integrate each sensor with a modem to communicate with the automated system manager (ASM).

B.3 Automated System Manager (ASM)

Provide an ASM that assesses current traffic data captured by the system PTS and communicates appropriate messages to the motorists through PCMS based on predetermined speed thresholds and messages.

B.4 System Communications

Ensure QWS communications meet the following requirements:

1. Perform required configuration of the QWS’s communication system automatically during system initialization.
2. Communication between the server and any individual PCMS or PTS are independent through the full range of deployed locations, and do not rely upon communications with any other PCMS or PTS.
3. Incorporate an error detection/correction mechanism into the QWS communication system to ensure the integrity of all traffic condition data and motorist information messages.

B.5 System Acceptance

Submit vendor verification to the engineer and Bureau of Traffic Operations (DOTBTOworkzone@dot.wi.gov) 14 calendar days before the pre-construction meeting that the system will adequately perform the functions specified in this special provision. Adequate verification includes past successful performance of the system, literature and references from successful use of the system by other agencies, and/or demonstration of the system.

Provide contact information for a designated representative responsible for monitoring the performance of the system and for making modifications to the operational settings as the engineer directs.

Provide all testing and calibration equipment.

C Construction

C.1 General

Install and reposition Portable Automated Real-Time Queue Warning System per plan or as the engineer directs. Provide plan to the engineer and Bureau of Traffic Operations (DOTBTOworkzone@dot.wi.gov) 14 calendar days before the pre-construction meeting.

PTS may be mounted on PCMS, arrow board or other trailer devices.

Install PTS at the following locations:

1. Place first PTS within the lane closure taper.

2. Place second PTS 5,700 feet upstream of the lane closure taper.
3. Place third PTS 2 miles upstream of the lane closure taper, if applicable.
4. Place any additional sensors even distances (in miles) upstream of the third PTS or as directed by the Engineer.

Install the PCMS at the following locations, delineated by 5 drums:

1. Place first PCMS (PCMS #2) 5,700 feet upstream of the lane closure taper.
2. Place second PCMS 2 miles upstream of the lane closure taper.
3. Place third PCMS 3 miles upstream of the lane closure taper.
4. Place any additional PCMS even distances (in miles) upstream of the third PCMS or as directed by the Engineer.

Number the devices in chronological order so they are visible from the shoulder with 6-inch white high reflective sheeting.

Provide technical personnel for all system calibration, operation, maintenance, and timely on-call support services.

Promptly correct the system within 24 hours of becoming aware of a deficiency in the operation or individual part of the system. A minimum of three days before deployment, place the QWS and demonstrate to the department that the QWS is operational.

Maintain the QWS for the duration of the project. Ensure the system operates continuously (24 hours, 7 days a week) in the automated mode throughout the duration of the project.

Remove the system upon project completion.

C.2 Reports

Provide an electronic copy of a weekly summary report of all data via email to the engineer. Ensure the report includes, at a minimum, the average speed per sensor, time in congestive state per sensor and number of triggers per day.

C.3 Meetings

Attend mandatory in-person pre-construction meetings with the department. Attend additional meetings as deemed necessary by the department. These meetings may be held in person or via teleconference, as scheduled by the department.

C.4 Programming

C.4.1 General

Program the QWS to ensure that the following general operations are performed:

1. Provide a password protected login to the ASM, website and all other databases.
2. Automatic setting of the PCMS message sequences to reflect current traffic flow status updated every 60 seconds for a congestion message. Ensure to remove a congestion message when 180 seconds of average traffic speeds above the current level are observed, or utilize a customized frequency as determined by the engineer.
3. The PCMS activate based on pre-determined speed thresholds.
    - PCMS #2 shall activate based on traffic speeds at the PTS within the lane closure tape.
    - All other PCMS in the QWS shall activate based on traffic speeds at the next downstream PTS, typically 1 mile downstream or based on traffic speeds at the two next downstream PTS.
3. Provide real-time data from the ASM to a website with a full color mapping feature and refresh every 60 seconds. Make data on website available to the department staff at all times for the duration of the work zone activity. Ensure website includes:
    - Vehicle speeds
    - PCMS messaging
    - Device locations
4. Archive all traffic data and PCMS messages in a Microsoft Excel format with date and time stamps.
5. Configure the website to quantify system failures which includes communication disruption between any devices in the system configuration, PCMS malfunctioning, PTS malfunction, loss of power, low battery, etc.
6. Automatically generate and send an email alert any time a user specified queue is detected by the system.
7. Provide default and advisory messages automatically based on traffic conditions.

8. Ensure the system autonomously restarts in case of any power failure.
9. Provide the department access to manually override PCMS messages for a user-specified duration, after which automatic operation will resume display of messages appropriate to the prevailing traffic conditions. Document all override messages.

C.4.2 System Operation Strategy

Arrange for the vendor/manufacturer to coordinate system operation, detection, trends/thresholds, and messaging parameters with the engineer.

The sequences below are a minimum requirement and can be adjusted by the engineer at their discretion.

Free Flow:

If the current speed on a roadway section is at or above 40 mph, the upstream PCMS shall display nothing except for lighting the four corners (flashing caution mode) to show that it is on.

Slow Traffic:

If the current speed on any downstream section of the roadway is between the 39 mph and 20 mph (for example, 35 mph), the following two phase messages will be displayed on the upstream PCMS as shown below:

EVENT	FRAME 1	FRAME 2
Speeds 20 mph to 39 mph	SLOW TRAFFIC AHEAD	PREPARE TO STOP

Stopped Traffic:

If the current speed on a roadway section of the roadway drops below 20 mph, the following two phase messages will be displayed on the upstream PCMS as shown below:

EVENT	FRAME 1	FRAME 2
Speeds 0 mph to 19 mph	TRAFFIC STOPPED AHEAD	EXPECT DELAYS

C.5 Calibration and Testing

At the beginning of the project perform a successful field test and calibration at the QWS location to verify the system is detecting accurate vehicle speeds, and accurately relaying the information to the ASM and the PCMS.

Send email of successful calibration and testing to the engineer.

D Measurement

The department will measure Portable Automated Real-Time Traffic Queue Warning System by the day, acceptably completed, measured as each complete system per roadway.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
643.1200.S	Portable Automated Real-Time Traffic Queue Warning System	DAY

Payment is full compensation for providing, repositioning, operating, maintaining, monitoring, calibrating, testing, and removing the complete system consisting of PCMS, PTS, ASM, and system communications.

Failure to correct a deficiency to the PCMS, PTS, or ASM within 24 hours after notification from the engineer or the department will result in a one-day deduction of the measured quantity for each day in which the deficiency is not corrected.

Failure to correct the website within 24 hours after notification from the engineer will result in a 10% reduction of the day quantity for each day the website is down.

The engineer will have sole discretion to assess the deductions for an improperly working QWS.

Contact the Bureau of Traffic Operations, Erin Schoon, at (414) 313-6841 for additional information and inclusion of a smart work zone system.

189. stp-643-046 Basic Traffic Queue Warning System, Item 643.1205.S.

A Description

This special provision describes providing, repositioning, operating, maintaining, monitoring, calibrating, testing and removing a basic traffic queue warning system (QWS) capable of measuring vehicular speeds at downstream sections of a roadway, and activating the system.

B Materials

Provide Basic Traffic QWS components and software that is National Transportation Communications for ITS Protocol (NCTIP) compliant.

B.1 Portable Traffic Sensors (PTS)

Provide PTS that are nonintrusive and capable of capturing vehicle speed in mph. Integrate each sensor with a modem to communicate with the automated system manager.

B.2 Static Traffic Control Signs with Temporary Flashing Beacon Signs (FBS)

Provide static traffic control signs with temporary flashing beacon signs conforming to standard spec 658.2(2) for Traffic Signal Faces. Ensure each FBS is integrated with a modem, and other equipment (e.g., automated system manager) mounted on it, and acts as a single device for communicating with similarly integrated devices and displaying real-time traffic conditions.

B.3 Automated System Manager

Provide an ASM that assesses current traffic data captured by the PTS and activates/deactivates the FBS based on predetermined speed thresholds.

B.4 System Communications

Ensure Basic Traffic QWS communications meet the following requirements:

1. Perform required configuration of the Basic Traffic QWS's communication system automatically during system initialization.
2. Communication between the server and any individual FBS or PTS are independent through the full range of deployed locations, and do not rely upon communications with any other FBS or PTS.
3. Incorporate an error detection/correction mechanism into the Basic Traffic QWS communication system to ensure the integrity of all traffic condition data.

B.5 System Acceptance

Submit vendor verification to the engineer and Bureau of Traffic Operations (DOTBTOworkzone@dot.wi.gov) 14 calendar days before the pre-construction meeting that the system will adequately perform the functions specified in this special provision. Adequate verification includes past successful performance of the system, literature and references from successful use of the system by other agencies, and/or demonstration of the system.

Provide contact information for a designated representative responsible for monitoring the performance of the system and for making modifications to the operational settings as the engineer directs. Provide all testing and calibration equipment.

C Construction

C.1 General

Install and reposition Basic Traffic Queue Warning System per plan or as the engineer directs. Provide plan to the engineer and Bureau of Traffic Operations (DOTBTOworkzone@dot.wi.gov) 14 calendar days before the pre-construction meeting.

PTS may be mounted on FBS, arrow board or other trailer devices.

Install PTS at the following locations:

1. Place first PTS within the lane closure taper.
2. Place second PTS 5,700 feet upstream of the lane closure taper or on FBS #3.
3. Place third PTS 2 miles upstream of the lane closure taper or on FBS #2.

Install FBS at the following locations, delineated by 5 drums:

1. Place first FBS (FBS #3) 5,700 feet upstream of the lane closure taper.
2. Place second FBS (FBS #2) 2 miles upstream of the lane closure taper.
3. Place third FBS (FBS #1) 3 miles upstream of the lane closure taper.

If there are more than 2 lanes or specified in the plans, place FBS on both sides of the roadway.

Number the devices in chronological order so they are visible from the shoulder with 6-inch white high reflective sheeting.

Provide technical personnel for all system calibration, operation, maintenance, and timely on-call support services.

Promptly correct the system within 24 hours of becoming aware of a deficiency in the operation or individual part of the system. A minimum of three days before deployment, place the Basic Traffic QWS and demonstrate to the Department that the Basic Traffic QWS is operational.

Maintain the Basic Traffic QWS for the duration of the project. Ensure the system operates continuously (24 hours, 7 days a week) in the automated mode throughout the duration of the project.

Remove the system upon completion.

C.2 Reports

Provide an electronic copy of a weekly summary report of all data via email to the engineer. Ensure the report includes, at a minimum, the average speed per sensor, time in congestive state per sensor and number of triggers per day.

C.3 Meetings

Attend mandatory in-person pre-construction meetings with the department. Attend additional meetings as deemed necessary by the department. These meetings may be held in person or via teleconference, as scheduled by the department.

C.4 Programming

C.4.1 General

Program the Basic Traffic QWS to ensure that the following general operations are performed:

1. Provide a password protected login to the ASM, website and all other databases.
2. Automatic setting of the FBS to reflect current traffic flow status updated every 60 seconds for congestion. Ensure to remove a congestion message when 180 seconds of average traffic speeds above the current level are observed, or utilize a customized frequency as determined by the engineer.
3. The FBS activate based on pre-determined speed thresholds from the next downstream sensor.
    - FBS #3 shall activate based on traffic speeds at the PTS located within the lane closure taper.
    - FBS #2 shall activate based on traffic speeds at the PTS located approximately 1 mile upstream of lane closure taper, or at FBS #3.
    - FBS #1 shall activate based on traffic speeds at the PTS located 2 miles upstream of lane closure taper, or at FBS #2.
4. Provide real-time data from the ASM to a website with a full color mapping feature and refresh every 60 seconds. Make data on website available to the department staff at all times for the duration of the work zone activity. Ensure website includes:
    - Vehicle speeds
    - FBS triggers
    - Device locations
5. Archive all traffic data in a Microsoft Excel format with date and time stamps.
6. Configure the website to quantify system failures which includes communication disruption between any devices in the system configuration, FBS malfunctioning, PTS malfunction, loss of power, low battery, etc.
7. Automatically generate and send an email alert any time a user specified queue is detected by the system.
8. Ensure the system autonomously restarts in case of any power failure.

C.4.2 System Operation Strategy

Arrange for the vendor/manufacturer to coordinate system operation, detection, and trends/thresholds with the engineer.

The sequences below are a minimum requirement, but can be adjusted at the discretion of the engineer, are as follows:

Free Flow:

If the current PTS speed on a downstream section is at or above 40 mph, the next upstream FBS will not flash.

Slow or Stopped Traffic:

If the current PTS speed on a downstream section of the roadway is between the 39 mph and 0 mph (for example, 35 mph), the next upstream FBS shall flash.

C.5 Calibration and Testing

At the beginning of the project and perform a successful field test and calibration at the Basic Traffic QWS location to verify the system is detecting accurate vehicle speeds, and accurately relaying the information to the ASM and the FBS.

Send email of successful calibration and testing to the engineer.

D Measurement

The department will measure Basic Traffic Queue Warning System by the day, acceptably completed, measured as each complete system per roadway.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
643.1205.S	Basic Traffic Queue Warning System	DAY

Payment is full compensation for providing, repositioning, operating, maintaining, monitoring, calibrating, testing, and removing the complete system consisting of FBS, PTS, ASM, and system communications.

Failure to correct a deficiency to the FBS, PTS, or ASM within 24 hours after notification from the engineer or the department will result in a one-day deduction of the measured quantity for each day in which the deficiency is not corrected.

Failure to correct the website within 24 hours after notification from the engineer will result in a 10% reduction of the day quantity for each day the website is down.

The engineer will have sole discretion to assess the deductions for an improperly working Basic Traffic QWS.

stp-643-046 (20200629)

190. stp-643-050 Traffic Channelizing Curb System, Item 643.0650.S.

A Description

This special provision describes providing maintaining and removing temporary traffic channelizing curb system at locations the plans show or the engineer directs.

B Materials

Furnish items from the department's approved products list.

C Construction

Install the curb sections according to the manufacturer's recommendations. Install vertical panels or flexible tubular markers per manufacturer's recommendations.

Review and repair the channelizing system in accordance with standard spec 643.3 or as the engineer directs.

Upon completion of the work, remove the channelizing system in a way that minimizes damage to the pavement. Repair damage done during removal as the engineer directs.

The temporary channelizing system shall remain the property of the contractor for systems used in temporary traffic control zones unless specified otherwise.

D Measurement

The department will measure Traffic Channelizing Curb System by the linear foot, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
643.0650.S	Traffic Channelizing Curb System	LF

Payment is full compensation for providing channelizing systems, and for maintaining, relocating, and removing the channelizing system.

stp-643-050 (20181119)

645-024 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

This STSP is required with standard bid item 645.0240 Geogrid Type MR to specify geogrid for marsh reinforcement. If more than one grade/type of marsh geogrid is required under the contract, use one special provision with more than one Geogrid Type MR standard spec bid item distinguished by their supplemental descriptions.

Add project-specific requirements not covered under standard spec 645.

General materials requirements are specified in standard spec "645.2.1 General" for geosynthetics and in "645.2.3.1 General" for geogrid. Add additional requirements for type MR geogrid to 645.2.3.3.

1. ***Materials Requirements:*** ***add materials requirements for the geogrid.***

General construction requirements are specified in standard spec "645.3.2.1 General" for geogrid and in "645.3.2.3.1 General" for type MR. Add additional subsections as required to specify construction operations.

1. ***Heading Titles:*** ***add heading titles for additional subsections.***
2. ***Construction Requirements:*** ***add construction requirements for each additional subsection.***

191. stp-645-024 Geogrid Type MR, Item 645.0240.

This special provision describes providing geogrid for marsh reinforcement. Conform to standard spec 645 as modified in this special provision.

Replace standard spec 645.2.3.3 with the following:

(1) [materials requirements].

Add the following to standard spec 645.3.2.3 after subsection 645.3.2.3.1:

645.3.2.3.2 [heading title]

(1) [construction requirements].

stp-645-024 (20160607)

645-026 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

This STSP is required with standard bid item 645.0260 Geogrid Type SSR to specify geogrid for slope stabilization reinforcement. If more than one grade/type of slope stabilization geogrid is required under the contract, use one special provision with more than one Geogrid Type SSR standard spec bid item distinguished by their supplemental descriptions.

Add project-specific requirements not covered under standard spec 645.

General materials requirements are specified in standard spec "645.2.1 General" for geosynthetics and in "645.2.3.1 General" for geogrid. Add additional requirements for type SSR geogrid to 645.2.3.4.

1. ***Materials Requirements:*** ***add materials requirements for the geogrid.***

General construction requirements are specified in standard spec "645.3.2.1 General" for geogrid and in "645.3.2.4.1 General" for type SSR. Add additional subsections as required to specify construction operations.

1. ***Heading Titles:*** ***add heading titles for additional subsections.***
2. ***Construction Requirements:*** ***add construction requirements for each additional subsection.***

192. stp-645-026 Geogrid Type SSR, Item 645.0260.

This special provision describes providing geogrid for slope stability reinforcement. Conform to standard spec 645 as modified in this special provision.

Replace standard spec 645.2.3.4 with the following:

(1) [materials requirements].

Add the following to standard spec 645.3.2.4 after subsection 645.3.2.4.1:

645.3.2.4.2 [heading title]

(1) [construction requirements].

stp-645-026 (20160607)

193. stp-645-030 Geotextile Type MS, Item 645.0125.

Provide type MS geotextile fabric conforming to standard spec 645 and conforming to the following physical properties:

Test	Method	Value[1]
Minimum Tensile Strength Machine direction	ASTM D 4595	Enter lbs/in lb/in
Minimum Tensile Strength Cross direction	ASTM D 4595	Enter lbs/in lb/in
Maximum Elongation at Required Strength	ASTM D 4595	Enter percent %
Minimum Puncture Strength	ASTM D 6241	Enter lbs lb
Maximum Apparent Opening Size	ASTM D 4751	No. Enter Size µm
Minimum Permittivity	ASTM D 4491	Enter permitivity value s^{-1}

[1] All numerical values represent minimum/maximum average roll values. Average test results from all rolls in a lot must conform to the tabulated values.

stp-645-030 (20171130)

645-035 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

This STSP is required with bid item 645.0135.

194. stp-645-035 Geotextile Type SR, Item 645.0135.

Provide type SR geotextile fabric conforming to standard spec 645 and conforming to the following physical properties:

Test	Method	Value[1]
Minimum Tensile Strength	ASTM D 4595	Enter lbs/in lb/in
Maximum Elongation at Required Strength	ASTM D 4595	Enter the percentage %
Minimum Puncture Strength	ASTM D 6241	Enter lb lb
Maximum Apparent Opening Size	ASTM D 4751	No. Enter Size µm
Minimum Permittivity	ASTM D 4491	Enter permitivity value s^{-1}

[1] All numerical values represent minimum/maximum average roll values. Average test results from all rolls in a lot must conform to the tabulated values.

stp-645-035 (20171130)

195. stp-645-040 Geotextile Fabric Type ES, Item 645.0115.

Provide type ES geotextile fabric conforming to standard spec 645 and conforming to the following physical properties:

Test	Method	Value[1]
Minimum Tensile Strength Machine direction	ASTM D 4595	Enter lbs/in lb/in
Minimum Tensile Strength Cross direction	ASTM D 4595	Enter lbs/in lb/in
Maximum Elongation at Required Strength	ASTM D 4595	Enter percent %
Maximum Apparent Opening Size	ASTM D 4751	No. Enter size µm
Minimum Permittivity	ASTM D 4491	Enter permitivity value s^{-1}

[1] All numerical values represent minimum/maximum average roll values. Average test results from all rolls in a lot must conform to the tabulated values.

stp-645-040 (20171130)

646-015 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Include these bid items and special provision on projects where Wet Reflective Epoxy is being placed over existing wet reflective epoxy (with no retrace of black contrast epoxy) in an existing groove.

Delete the items not be used for your project from the title and from the table in section E Payment.

196. stp-646-015 Marking Replace Line Wet Reflective Epoxy 4-inch, Item 646.1041.S; Marking Replace Line Wet Reflective Epoxy 8-inch, Item 646.3041.S.

A Description

This special provision describes applying wet reflective epoxy marking over existing grooved pavement marking conforming to standard spec 646, as the plans show, and as follows.

B Materials

Furnish wet reflective epoxy pavement marking materials conforming to standard spec 646.2.

C Construction

Remove loose marking. Clean and prepare the surface of the existing marking and the groove to accept the new wet reflective epoxy marking.

Apply wet reflective epoxy marking conforming to standard spec 646.3 and as follows:

If black contrast marking lines are present, ensure the black contrast marking lines are not covered by the white wet reflective epoxy.

Repair or replace new marking that was improperly applied or that fails during the proving period as specified in standard spec 646.3.1.5.

D Measurement

The department will measure the Marking Replace Line Wet Reflective Epoxy bid items by the linear foot of line, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
646.1041.S	Marking Replace Line Wet Reflective Epoxy 4-Inch	LF
646.3041.S	Marking Replace Line Wet Reflective Epoxy 8-Inch	LF

Payment is full compensation for providing the marking, including remarking as required under standard spec 646.3.1.2(2).

stp-646-015 (20180628)

646-020 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Include these bid items and special provision on projects where Contrast Wet Reflective Epoxy (both the black and white epoxy) is being placed over contrast wet reflective markings in an existing groove.

Delete the items not be used for your project from the title and from the table in section E Payment.

197. stp-646-020 Marking Replace Line Contrast Wet Reflective Epoxy 4-inch, Item 646.1546.S; Marking Replace Line Contrast Wet Reflective Epoxy 8-inch, Item 646.3546.S.

A Description

This special provision describes applying contrast wet reflective epoxy marking over existing grooved pavement marking conforming to standard spec 646, as the plans show, and as follows.

B Materials

Furnish contrast wet reflective epoxy pavement marking materials conforming to standard spec 646.2.

C Construction

Remove loose marking. Clean and prepare the surface of the existing marking and the groove to accept the new contrast wet reflective epoxy marking.

Apply contrast wet reflective epoxy marking conforming to standard spec 646.3 and as follows:

Editor: Remove bullet for size not included in the contract.

- For 4-inch: apply two 1 1/2-inch wide black epoxy lines with a 4-inch separation between the two black lines for the first pass, followed by a 4-inch wide white epoxy line second pass, for a total width of 7 inches.
- For 8-inch: apply two 1 1/2-inch wide black epoxy lines with an 8-inch separation between the two black lines for the first pass, followed by an 8-inch wide white epoxy line second pass, for a total width of 11 inches.

Repair or replace new marking that was improperly applied or that fails during the proving period as specified in standard spec 646.3.1.5.

D Measurement

The department will measure the Marking Replace Line Contrast Wet Reflective Epoxy bid items by the linear foot of line, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
646.1546.S	Marking Replace Line Contrast Wet Reflective Epoxy 4-Inch	LF
646.3546.S	Marking Replace Line Contrast Wet Reflective Epoxy 8-Inch	LF

Payment is full compensation for providing the marking, including remarking as required under standard spec 646.3.1.2(2).

stp-646-020 (20180628)

198. stp-646-030 Pavement Marking Paint High Build 4-Inch, Item 646.0101.S; Pavement Marking Paint High Build 8-Inch, Item 646.0121.S.

A Description

This special provision describes providing a high build fast dry waterborne pavement marking material on the final pavement surface.

B Materials

Furnish high build fast dry waterborne pavement marking material from the department's approved products list.

C Construction

Apply high build fast dry waterborne pavement marking material uniformly across the line at or exceeding 20-mil wet thickness (22 gallons per mile) of continuous 4-inch line. Apply glass spheres uniformly across the width of the line at or exceeding a rate of 10 lbs per gallon of paint.

D Measurement

The department will measure the Pavement Marking Paint High Build (Inch) in length by the linear foot of line acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
646.0101.S	Pavement Marking Paint High Build 4-Inch	LF
646.0121.S	Pavement Marking Paint High Build 8-Inch	LF

Payment is full compensation for cleaning and preparing the pavement surface; and for furnishing and installing the material.

stp-646-030 (20080902)

648-005 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

This STSP is required with bid item 648.0100 for locating No-Passing zones in areas with posted speeds of 55 mph. Consult the region's traffic section before inserting one of the following three options for the spotting sight distance: 1) 0.16 miles (845 feet) 2) 0.21 miles (1108 feet) 3) 0.26 miles (1373 feet).

199. stp-648-005 Locating No-Passing Zones, Item 648.0100.

For this project, the spotting sight distance in areas with a 55 mph posted speed limit is ***Select from drop-down.***.

stp-648-005 (20060512)

200. stp-651-005 Signal Controller Training, Item 651.1000.S.

A Description

This special provision describes providing training and instruction relating to the operation, maintenance, and installation of the traffic signal controller and associated equipment.

B (Vacant)

C Construction

Provide a competent representative capable of instructing the operators of the system in (a) theory of application and operation; (b) electronic circuitry; and (c) hands-on, trouble shooting of the equipment. Conduct instruction and training at the job site or other approved location and furnish a partially assembled or breakdown equivalent model of the controller to assist in teaching the operators in theory, assembly, operation, and maintenance.

Provide a minimum of 16 hours of training. Provide operations and maintenance manuals for all training participants.

D Measurement

The department will measure Signal Controller Training as a single complete unit of work.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
651.1000.S	Signal Controller Training	LS

Payment is full compensation for furnishing the instructor, controller model, and operations and maintenance manuals; and for providing training.

stp-651-005 (20030820)

201. stp-652-070 Install Conduit Into Existing Item, Item 652.0700.S.

A Description

This special provision describes installing proposed conduit into an existing manhole, pull box, junction box, communication vault, or other structure.

B Materials

Use Enter Type, Size, and Number of Conduit, as provided and paid for under other items in this contract. Furnish backfill material, topsoil, fertilizer, seed, and mulch conforming to the standard spec.

C Construction

Expose the outside of the existing structure without disturbing existing conduits or cabling. Drill the appropriate sized hole for entering conduits at a location within the structure without disturbing the existing cabling and without hindering the installation of new cabling within the installed conduit. Fill void area between the drilled hole and conduit with an engineer-approved filling material to protect against conduit movement and entry of fill material into the structure. Tamp backfill into place.

D Measurement

The department will measure Install Conduit Into Existing System by the unit, acceptably installed. Up to five conduits entering a structure per entry point into the existing structure will be considered a single unit. Conduits in excess of five, or conduits entering at significantly different entry points into the existing pull box, manhole, or junction box will constitute multiple units of payment.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
652.0700.S	Install Conduit Into Existing Item	EACH

Payment is full compensation for excavating, drilling holes; furnishing and installing all materials, including bricks, coarse aggregate, sand, bedding, and backfill; for excavating and backfilling; and for furnishing and placing topsoil, fertilizer, seed, and mulch in disturbed areas; for properly disposing of surplus materials; and for making inspections.

stp-652-070 (20100709)

202. stp-662-005 Ramp Closure Gates 24-FT, Item 662.1024.S; Ramp Closure Gates 26-FT, Item 662.1026.S; Ramp Closure Gates 28-FT, Item 662.1028.S; Ramp Closure Gates 30-FT, Item 662.1030.S; Ramp Closure Gates 32-FT, Item 662.1032.S; Ramp Closure Gates 37-FT, Item 662.1037.S; Ramp Closure Gates 40-FT, Item 662.1040.S.

A Description

This special provision describes providing freeway on-ramp closure gates on type 5 steel luminaire poles.

B Materials

B.1 General

Provide five user manuals and a listing of vendors and contact information for each manufactured component including flasher electrical components.

The engineer may allow alternates equal to specified manufactured components. The engineer may require plan detail modifications to accommodate alternates. The engineer may accept alternate arms or mounting adaptors only if the contractor can demonstrate that the department can easily remove and replace the arms.

B.2 Components

Furnish type 5 steel poles designed to carry twin 15-foot luminaire arms and conforming to standard spec 657 and with dimensions for acceptable installation of the ramp gate hardware as shown on the detail. Ensure a contiguous pole by eliminating the hand hole near base of pole, thus allowing uninhibited mounting of the gate pivot assembly.

Furnish galvanized steel nuts and bolts conforming to ASTM A307 except where designated as high strength (HS), conform to ASTM F3125. For the ramp closure gate locking mechanism, furnish a 3/4-inch handle nut.

Furnish grade A36 steel for the gate supports, gate pivot assembly, and associated hardware galvanized after fabrication by either a mechanical or hot-dip process. Grind welded connections, rough edges, and burrs smooth before galvanizing to ensure a finished appearance. Ensure that the galvanized coating conforms to ASTM A 153.

Provide aluminum/fiberglass gate arms of the nominal length the bid item indicates and conforming to plan dimensions. Cover gate arms on two sides with alternating red and white shop-applied type H reflective from the department's approved products list. Also provide a shear pin base that is the manufacturer’s "permanent pivot" style. Obtain components from:

B&B Roadway
15191 Hwy 243
Russellville, AL 35654
Tel: (888) 560-2060
Gate arm: Model MU605

Furnish a worm gear winch with a single line vertical lift capacity of 2000 lbs. Ensure that the winch has hardened steel gears, a handgrip, permanently lubricated bearings, a reinforced arc-welded reel assembly, and mounting plate. Ensure that the winch can be mounted to the winch mount plate shown on the construction details and the handgrip can be operated without conflict with the pole or ramp gate assembly. Furnish a 2-inch outdoor rated, rot resistant polyester strap for the connection between the worm gear winch and the gate arm pivot assembly.

C Construction

Provide ramp closure gate at the locations the plans show. Apply marine grade anti seize compound compound to all bolt threads and to the interface between the aluminum base and steel pole. The engineer may direct adjustment of the gate arm assembly to ensure the correct vertical and angular orientation of the completed closure gate.

Install structure identification plaques in the location the plan details show.

D Measurement

The department will measure the Ramp Closure Gates bid items as each individual installation, 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
662.1024.S	Ramp Closure Gates 24-FT	EACH
662.1026.S	Ramp Closure Gates 26-FT	EACH
662.1028.S	Ramp Closure Gates 28-FT	EACH
662.1030.S	Ramp Closure Gates 30-FT	EACH
662.1032.S	Ramp Closure Gates 32-FT	EACH
662.1037.S	Ramp Closure Gates 37-FT	EACH
662.1040.S	Ramp Closure Gates 40-FT	EACH

Payment for the Ramp Closure Gate bid items is full compensation for providing ramp closure gates including support poles; for gate arm assemblies including guides, collars, and gate arms; and for structure identification plaques.

stp-662-005 (20191121)

203. stp-662-015 Ramp Closure Barricade Rack 2-Unit, Item 662.6020.S.; Ramp Closure Barricade Rack 3-Unit, Item 662.6030.S.

A Description

This special provision describes providing storage racks for barricades used to temporarily close off entrance ramps to divided highways.

B Materials

Furnish wooden posts conforming to standard spec 634.2.1.

Fabricate tubular steel components using structural quality 12-gauge strip steel conforming to ASTM designation A1011, grade 50 with an average minimum yield strength, after cold-forming, of 55,000 psi. The contractor may use perforated tubing.

Hot dip galvanize each tube according to ASTM A653 grade 90. Treat corner welds and cut ends with cold-galvanized organic zinc paint as manufacturer recommends.

Furnish galvanized bolts, nuts, and washers zinc-coated according to ASTM A153.

C Construction

Install wood posts conforming to standard spec 634.3.1 and the plan details. Fabricate and install tubular steel components as the plans show.

D Measurement

The department will measure the Ramp Closure Barricade Rack bid items as each individual barricade rack, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
662.6020.S	Ramp Closure Barricade Rack 2-Unit	EACH
662.6030.S	Ramp Closure Barricade Rack 3-Unit	EACH

Payment is full compensation for providing barricade racks; for wood posts; and for galvanized tubular steel components and hardware.

stp-662-015 (20130615)

204. stp-670-005 Intelligent Transportation Systems (ITS) – Control of Materials.

Standard spec 106.2 – Supply Source and Quality

Add the following to standard spec 106.2:

The department will furnish a portion of equipment to be installed by the contractor. This department-furnished equipment includes the following:

Department-Furnished Items
Enter Item Name
Enter Item Name
Enter Item Name
Enter Item Name

Pick-up small department-furnished equipment, such as communications devices, cameras, and controllers, from the department's Statewide Traffic Operations Center (STOC), 433 W. St. Paul Ave., Milwaukee, WI 53203 at a mutually agreed upon time during normal state office hours. Contact the department's STOC at (414) 227-2166 to coordinate pick-up of equipment.

Large department-furnished equipment, such as camera poles will be delivered by the supplier to a contractor-controlled site within Enter County Name County. Delivery will not necessarily be in a "just in time" manner. Store the equipment until field installation. Provide location details and a contact for delivery coordination upon receiving the contract's Notice to Proceed.

Transportation of the equipment between the electric shop and the field or interim locations are the responsibility of the contractor.

Standard spec 106.3 – Approval of Materials

Add the following to standard spec 106.3:

Design/Shop Drawings

Before the purchase and/or fabrication of any of the components listed herein, and for any non-catalog item shown on the Material and Equipment List specified above, and no more than 30 days after notice to proceed, submit five copies of design drawings and shop drawings, as required, to the department for review. The items and the drawings that represent them shall meet the requirements of the standard specifications.

Design drawing submissions shall consist of signed and certified designs, design drawings, calculations, and material specifications for required items.

Shop drawings will be required for, but not limited to the following:

1. Mounting assemblies for the vehicle speed and classification sensors, including their attachment to the structure.
2. Mounting LED warning signs to the sign structure.
3. Mounting detail for dynamic message signs.
4. Any contractor-designed structure or foundation.

The department will complete its review of the material within 30 days from the date of receipt of the submission, unless otherwise specified. The department will advise the contractor, in writing, as to the acceptability of the material submitted. The department may determine that if no exceptions were taken for the item, it is approved, and no further action is required by the contractor; or the item may be partially or totally rejected, in which case modify and/or amend the submittal as required by the department and resubmit the item within 14 days. At this time, the review and approval cycle described above will begin again.

stp-670-005 (20150630)

205. stp-670-010 Intelligent Transportation Systems - General Requirements.

A Description

A.1 General

This special provision describes providing elements for an Intelligent Transportation System (ITS) in or along the existing roadway as the plans show.

Unusual aspects of this project include:

1. The project includes working on cables and equipment that are carrying data between roadside equipment and the department's Statewide Traffic Operations Center (STOC). Interruption of this service is not expected to perform this work. If an interruption is determined necessary, it must be done on a weekend, and must be done in a way that minimizes communication outages for the existing equipment. Notify the department's STOC at least 48 hours in advance of the planned interruption.
2. The department will furnish some of the equipment to be installed. Make a reasonable effort to discover defects in that equipment before installing it.

A.2 Surge Protection

Equip every ungrounded conductor wire entering or leaving any equipment cabinet with a surge protector. For purposes of this section, multiple cabinets on a single pole or foundation are considered a single cabinet.

B Materials

B.1 General

Only furnish equipment and component parts for this work that are new and have high quality workmanship. All controls, indicators, and connectors shall be clearly and permanently labeled in a manner approved by the engineer. All equipment of each type shall be identical.

All electrical equipment shall conform to the standards and requirements of the Wisconsin Electrical Code, the National Electrical Manufacturers Association (NEMA), National Electric Safety Council (NESC), Underwriter's Laboratory Inc. (UL) or the Electronic Industries Association (EIA), when applicable. All materials and workmanship shall conform to the requirements of the National Electrical Code (NEC), Rural Electrification Administration (REA), Standards of the American Society for Testing and Materials (ASTM), American Association of State Highway and Transportation Officials (AASHTO), requirements of the plans these special provisions, the standard specifications, and to any other codes, standards, or ordinances that may apply. All system wiring, conduit, grounding hardware and circuit breakers shall be in conformance with the National Electrical Code. Whenever reference is made to any of the standards mentioned, the reference shall be considered to mean the code, ordinance, or standard that is in effect at the time of the bid advertisement.

B.2 Outdoor Equipment

All conductive connectors, pins (except pins connected by soldering), and socket contacts shall be gold plated. Acrylic conformal coating shall protect each circuit board side that has conductive traces. Except for integrated circuits containing custom firmware, all components shall be soldered to the printed circuit board.

To prevent galvanic corrosion, all connections between dissimilar metals shall incorporate a means of keeping moisture out of the connection. Where the connection need not conduct electricity, interpose a non-absorbing, inert material or washer between the dissimilar metals. Use nonconductive liners and washers to insulate fasteners from dissimilar metals. Where the connection must conduct electricity, use a conductive sealant between the dissimilar metals. Alternatively, use an insulating gasket and a bond wire connecting the two metal parts.

B.3 Custom Equipment

Equipment that is not part of the manufacturer's standard product line, or that is made or modified specifically for this project, shall conform to the following requirements:

Where practical, electronics shall be modular plug-in assemblies to facilitate maintenance. Such assemblies shall be keyed to prevent incorrect insertion of modules into sockets.

All components shall be available from multiple manufacturers as part of the manufacturers' standard product lines. All must be clearly labeled with the value, part number, tolerance, or other information sufficient to enable a technician to order an exact replacement part.

Lamps used for indicator purposes shall be light-emitting diodes.

The printed circuit boards shall be composed of "two-ounce" copper on 1/16 inch thick fiberglass epoxy or equivalent type construction. Holes that carry electrical connections from one side of the boards to the other shall be completely plated through. Multilayer printed circuit boards shall not be used. The name or reference number used for the board in the drawings and maintenance manuals supplied to the department shall be permanently affixed to each board.

All components shall be mounted so that the identifying markings are visible without moving or removing any part, if practical.

B.4 Environmental Conditions

Equipment shall continue to operate as specified under the following ranges of environmental conditions, except as noted in the specifications for individual pieces of equipment.

1. **Vibration and Shock:** Vehicle speed and classification sensors and any other equipment mounted atop poles or on structures shall not be impaired by the continuous vibration caused by winds (up to 90 mph with a 30 percent gust factor) and traffic.
2. **Duty Cycle:** Continuous
3. **Electromagnetic Radiation:** The equipment shall not be impaired by ambient electrical or magnetic fields, such as those caused by power lines, transformers, and motors. The equipment shall not radiate signals that adversely affect other equipment.
4. **Electrical Power:**
   - 4.1. **Operating power:** The equipment shall operate on 120-volts, 60-Hz, single-phase unless otherwise specified. It shall conform to its specified performance requirements when the input voltage varies from 89 to 135 volts and the frequency varies +3 Hz.
   - 4.2. **High frequency interference:** The equipment operation shall be unaffected by power supply voltage spikes of up to 150 volts in amplitude and 10 microseconds duration.
   - 4.3. **Line voltage transients:** The equipment operation shall be unaffected by voltage transients of plus or minus 20 percent of nominal line voltage for a maximum duration of 50 milliseconds. Equipment in the field shall meet the power service transient requirements of NEMA Standard TS-2 when connected to the surge protectors in the cabinets.
5. **Temperature and Humidity:**
   - 5.1. **Field equipment:** Equipment in the field shall meet the temperature and humidity requirements of NEMA Standard TS-2. Liquid crystal displays shall be undamaged by temperatures as high as 165 degrees F, and shall produce a usable display at temperatures up to 120 degrees F.
   - 5.2. **Equipment in Controlled Environments:** shall operate normally at any combination of temperatures between 50 degrees F and 100 degrees F, and humidity's between 5 percent and 90 percent, non-condensing, and with a temperature gradient of 9 degrees F per hour.

B.5 Patch Cables and Wiring

All cables and wiring between devices installed in a single cabinet, or in separate cabinets sharing a single concrete base, will be considered incidental to the installation of the devices and no separate payment will be made for them. It is anticipated that this will include fiber optic patch cables between termination panels and Ethernet switches, 10 / 100 MBPS Ethernet cables, RS-232 cables between individual devices and terminal servers, and power cables between individual devices and power sources within the cabinets.

B.6 Surge Protection

Low-voltage signal pairs, including twisted pair communication cable entering each cabinet shall be protected by two-stage, plug-in surge protectors and shall be installed on both ends of camera control cables. The protectors shall meet or exceed the following minimum requirements:

1. The protectors shall suppress a peak surge current of up to 10k amps.
2. The protectors shall have a response time less than one nanosecond.
3. The protector shall clamp the voltage between the two wires at a voltage that is no more than twice the peak signal voltage and clamp the voltage between each wire and ground at 50 volts.
4. The first stage of protection shall be a three-element gas discharge tube, and the second stage shall consist of silicon clamping devices.
5. The protector shall also contain a resettable fuse (PTC) to protect against excessive current.

6. There shall be no more than two pairs per protector.
7. It shall be possible to replace the protector without using tools.

Cables carrying power to curve signs shall be protected at the cabinet by grounded metal oxide varistors of appropriate voltages. The varistors must be at least 0.8 inch in diameter.

C Construction

C.1 Thread Protection

Provide rust, corrosion, and anti-seize protection at all thread assemblies of metallic parts by coating (non-spray) the mating surfaces with an approved compound. Failure to use an approved compound will result in no payment for the items to which coating was to have been applied.

C.2 Cable Installation

When installing new cables into conduits containing existing cables, remove the existing cables and reinstall the existing cables simultaneously with the new cables. Take every precaution necessary to protect the existing cables. In the event of avoidable damage to the existing cables, replace all damaged cables, in-kind, at no additional expense to the department. When cables are pulled into conduit, use a cable pulling lubricant approved by the cable manufacturer. Submit documentation supporting manufacturer approval of the lubricant to the engineer.

C.3 Wiring

Every conductor, except a conductor contained entirely within a single piece of equipment, must terminate either in a connector or on a terminal block. Provide and install the connectors and terminal blocks where needed, without separate payment. Use approved splice kits instead of connectors and terminal blocks for underground power cable splices.

Permanently label and key connectors to preclude improper connection. Obtain prior engineer approval for labeling methods before use.

Terminal blocks must be affixed to panels that permanently identify the block and what wire connects to each terminal. This may be accomplished by silk screening or by installing a laminated printed card under the terminal block, with the labels on portions of the card that extend beyond the block. Installation of terminal blocks by drilling holes in the exterior wall of the cabinet is not acceptable.

Use barriers to protect personnel from accidental contact with all dangerous voltages.

Do not install conductors carrying AC power in the same wiring harness as conductors carrying control or communication signals.

Arrange wiring, including fiber optic pigtails, so that any removable assembly can be removed without disturbing wiring that is not associated with the assembly being removed.

Communication and control cables may not be spliced underground, except where indicated on the plans.

Cables in the Statewide Traffic Operations Center or in communication hubs, which are not contained within a single cabinet, shall have at least 10 feet of slack.

C.4 System Operations

If the contractor's operations unexpectedly interrupt Intelligent Transportation Systems (ITS) service, notify the engineer immediately and restore service within 24 hours. Repair all damaged facilities to the condition existing before the interruption. If service is not restored within 24 hours, the department may restore service to any operating device and deduct restoration costs from payments due the contractor.

C.5 Surge Protection

Arrange the equipment and cabinet wiring to minimize the distance between each conductor's point of entry and its protector. Locate the protector as far as possible from electronic equipment. Ensure that all wiring between the surge protectors and the point of entry is free from sharp bends.

D Measurement

The department will not measure the work performed under this special provision.

E Payment

The department will pay for the work performed under this special provision under the contract ITS bid items.

stp-670-010 (20100709)

206. stp-671-005 Intelligent Transportation Systems – Conduit.

Add the following to standard spec 671.2:

671.2.4 Locate Wire

Provide a No. 14 AWG stranded copper wire for future locate purposes through each conduit run. Connect the locate wire by using a wire nut at each pull box, manhole, or other access point. Alternatively, use a single wire through the access points. All material furnished under this item shall meet the requirements of standard spec 655.

stp-671-005 (20150630)

207. stp-673-005 Install ITS Field Cabinet, Item 673.0200.S.

A Description

This special provision describes installing a department-furnished type 170, size 334 field cabinet.

B Materials

The department will furnish the type 170, size 334 field cabinet. Provide all necessary miscellaneous mounting hardware and internal power cables. With the field cabinet, the department will furnish cabinet bolts to anchor the cabinet to the concrete base.

C Construction

Install the field cabinet on a new or existing concrete base paid separately. Make all power connections to the cabinet, isolating the neutral bus from the cabinet and equipment ground.

Effectively ground all cable grounding shields and any spare or unused conductors in the field cabinet to the equipment grounding terminal strip.

D Measurement

The department will measure Install ITS Field Cabinet by the unit, installed according to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
673.0200.S	Install ITS Field Cabinet	EACH

Payment is full compensation for installing the state-furnished field cabinet; making all connections; and grounding as necessary.

stp-673-005 (20100630)

208. stp-673-010 Install Pole Mounted Cabinet, Item 673.0225.S.

A Description

This special provision describes installing department furnished aluminum enclosures on poles for intelligent transportation systems equipment.

B Materials

Use stainless steel bolts, nuts, and washers unless otherwise specified.

All conductors, terminals, and parts that could be hazardous to maintenance personnel shall be protected with suitable insulating material.

The cabinet will be equipped with service panels. Two panels shall be provided and mounted on the cabinet sidewalls. The left side panel shall be designated as "Input/Communications," and the right side panel shall be designated as the "Service Panel."

The service panel will be equipped with a four-outlet handi-box. Wire the handi-box to the series portion of the filtering surge protector.

Use metallic conduit, fittings, and adapters required from the underground conduit transition point to the cabinet as part of this item. A typical installation requires on 2-inch conduit. Use metallic conduit conforming to standard spec 652.

C Construction

Fasten the field cabinet securely onto a pole. Provide bolted stainless steel connections with lock washers, locking nuts, or other engineer-approved means to prevent the connection nuts from backing off. Isolate dissimilar materials from one another using stainless steel fittings. Make all power connections to the cabinet as specified in standard spec 656.

Drill and tap the cabinet, as necessary, to mount the terminal blocks and other attachments to the service panel, to provide an entrance on the back of the cabinet for cable from the pole mounted intelligent transportation systems equipment, and to mount the service panel to the cabinet as shown in the details. Remove all sharp edges or burrs, or both, caused by the cutting or drilling process. Seal all openings to prevent water from entering the cabinet. Mount the surge protector to the service panel.

Install metallic conduit on the exterior of the pole (for entrance to the cabinet from the ground) as the plans show, and according to the applicable requirements of standard spec 652.

D Measurement

The department will measure Install Pole Mounted Cabinet as each individual assembly, 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
673.0225.S	Install Pole Mounted Cabinet	EACH

Payment is full compensation for installing the pole mounted cabinet; for making all connections and conduit/wire entrances; and for all testing.

stp-673-010 (20100630)

209. stp-677-030 Install Video Encoder, Item 677.0300.S.

A Description

This special provision describes installing a state-furnished video encoder in a pole mounted cabinet or field cabinet as the plans show.

B Materials

Provide Category 5 or better Ethernet cable to connect the Ethernet video encoder to the Ethernet switch. The department will furnish the video encoder or it will be an existing and salvaged encoder.

C Construction

Make the necessary electrical and communication network connections to the video encoder. Mount the video encoder in the pole mounted cabinet or field cabinet. Program the video encoder according to the manufacturer's instructions.

D Measurement

The department will measure Install Video Encoder by each individual assembly, 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
677.0300.S	Install Video Encoder	EACH

Payment is full compensation for installing the video encoder in a pole mounted cabinet or field cabinet; for making all connections; and for all programming.

stp-677-030 (20100630)

Use this STSP when installing a department-furnished video image detector card.

210. stp-677-040 Install Video Image Detector Card, Item 677.0400.S.

A Description

This special provision describes installing a state-furnished video image detector card as the plans show.

B Materials

The department will furnish the video image detector card.

C Construction

Make all coaxial and electrical cable connections to the field cabinet and video image detector card to provide the required operation.

D Measurement

The department will measure Install Video Image Detector Card by the unit, acceptably installed and made operational.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
677.0400.S	Install Video Image Detector Card	EACH

Payment is full compensation for furnishing and installing the video image detector card, for making necessary connections; and for transporting materials as necessary.

stp-677-040 (20100630)

211. stp-677-050 Install Video Detection Camera, Item 677.0500.S.

A Description

This special provision describes installing a state-furnished video detection camera and associated power supply as the plans show.

B Materials

Furnish mounting brackets to attach the camera to the pole or sign structure.

Provide RG-59U cable for video with a solid, bare copper center conductor and 100 percent shielding. Provide power cable with conductor sizes appropriate for the maximum current draw of the equipment and for the length of the cable runs. Provide all necessary connectors.

C Construction

Mount the camera on an existing pole, proposed pole, or sign structure. Install the camera so that there are no obstructions in the view of the traffic detection zones as the plans show.

Install the camera cables in the pole or sign structure, concrete base, conduits, and pull boxes or manholes as the plans show.

Terminate the cables from the camera in a nearby base-mounted cabinet, as the plans show or as the engineer directs. Install the state-furnished camera power supply in this cabinet.

Install all the cables into the cabinet and terminate them on surge protectors. Connect the camera power circuit to the power supply.

After installation, conduct an engineer approved operational test, which, at a minimum, verifies that all interconnecting cable installation are according to the specifications.

If any work proceeds at a location, without completion of testing procedures, the contractor shall be responsible for the ultimate correct operation of the coaxial and electrical cable. The cost of correcting the cable connections shall be at no cost to the department.

The contractor shall demonstrate the functionality and accuracy of the vehicle detectors connected to each location. The traffic flow information obtained from each detector shall be within ± 5% of each of two 10-minute manual data periods.

The ITS Field System Integrator shall successfully complete a field test for each video image detector card, including testing all connections. The test is designed to demonstrate that the Video Image Detector Card integrated by the contractor operates correctly, and that all functions are in conformance with these specifications.

Following successful completion of the above tests, activate the video image detector card and leave it on for 30 consecutive days. During this period, all materials and components of the video image detector card shall operate as specified and without any failure.

In the event that any component of the video image detector card malfunctions or operates below the level specified, the test period shall be terminated; the ITS Field System Integrator shall be required to determine the problem and report the findings to the engineer. Upon correcting the problems to the satisfaction of the engineer, a new 30-day test period shall start. In the event a malfunction is the result of equipment not installed by the contractor, such as power service, the acceptance test period will be suspended until others make the necessary correction.

Before any field operations testing, the contractor and/or ITS Field System Integrator shall submit copies of the test results, including all unsuccessful and subsequently successful tests, to the engineer.

Submit copies of the test results, including any unsuccessful and subsequently successful tests, to the engineer.

D Measurement

The department will measure Install Video Detection Camera by the unit, acceptably installed and tested.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
677.0500.S	Install Video Detection Camera	EACH

Payment is full compensation for installing the video detection camera assembly on the pole or sign structure; installing power supply in nearby cabinet; furnishing, installing, and testing the camera and camera cables, mounting brackets, and surge protectors; furnishing miscellaneous hardware needed to complete the installation; and for all transporting of materials as necessary.

stp-677-050 (20100630)

Use this STSP when installing a department-furnished video detection processor.

212. stp-677-060 Install Video Detection Processor, Item 677.0600.S.

A Description

This special provision describes installing a state-furnished video detection processor and incorporating the video detection system into the functionality of the ramp meter.

B (Vacant)

C Construction

Make all coaxial and electrical cable connections to the card to provide the required operation. Carry out all set-up and configuration activities recommended by the manufacturer.

D Measurement

The department will measure Install Video Detection Processor by the unit, acceptably installed and tested.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
677.0600.S	Install Video Detection Processor	EACH

Payment is full compensation for installing the processor; for making all connections; for all testing; and for transporting materials.

stp-677-060 (20100630)

677-900 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

This STSP should be used when contractor needs to disconnect all cables and wiring and salvage and store the camera pole. To reinstall the camera with lowering system, include bid item 677.0100 Install Camera Pole in the proposal.

Delete the items not be used for your project from the title and from the table in section E Payment.

213. stp-677-900 Salvage 50-Foot Camera Pole with Lowering System, Item 677.9050.S; Salvage 80-Foot Camera Pole with Lowering System, Item 677.9080.S.

A Description

This special provision describes removing existing camera poles with lowering system and salvaging poles for reinstallation.

B (Vacant)

C Construction

Disconnect all cables and wiring that are mounted on or in the poles and remove the pole from the concrete footing. Salvage and store the camera pole, lowering system, and other equipment attached to the pole for reinstallation on a new concrete base. Reinstallation of the camera pole and lowering system will be paid under the bid item Install Camera Pole, Item 677.0100.

The contractor may request a meeting with the engineer to assess the condition and operability of the pole and lowering system before beginning any work. Any damage or improper operation not noted at the meeting, or before the contractor starting work on the removal, will be assumed to be the fault of the contractor. Repair or replace the camera pole and/or lowering system.

D Measurement

The department will measure Salvage (Height) Camera Pole with Lowering System by the unit, acceptably removed and safely stored, according to the contract.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
677.9050.S	Salvage 50-Foot Camera Pole with Lowering System	EACH
677.9080.S	Salvage 80-Foot Camera Pole with Lowering System	EACH

Payment is full compensation for removing and safely storing the existing camera pole with lowering system; disconnecting any necessary wiring; removing the equipment mounted on the poles; and properly disposing of cabling and wiring.

stp-677-900 (20100630)

214. stp-677-901 Removing 50-Foot Camera Pole, Item 677.9051.S; Removing 80-Foot Camera Pole, Item 677.9081.S.

A Description

This special provision describes removing existing camera poles.

B (Vacant)

C Construction

Disconnect all cables, wiring and equipment that are mounted on or in the poles, and remove the pole from the concrete footing. The department will pick up any antennae, cameras, or other equipment mounted on the pole; contact maintenance staff at (414) 227-2166 at the department's Statewide Traffic Operations Center, when the material is ready to be picked up. Properly dispose of the pole, conduit, cabling, and wiring away from the project site.

D Measurement

The department will measure Removing (Height) Camera Pole by the unit, acceptably removed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
677.9051.S	Removing 50-Foot Camera Pole	EACH
677.9081.S	Removing 80-Foot Camera Pole	EACH

Payment is full compensation for removing and disposing of the existing camera pole; disconnecting any necessary wiring; removing the equipment mounted on the poles; disposing of cabling and wiring; and transportation.

stp-677-901 (20100630)

215. stp-677-902 Removing CCTV Camera, Item 677.9200.S.

A Description

This special provision describes removing existing CCTV cameras from existing camera poles as the plans show.

B (Vacant)

C Construction

Disconnect all wiring at the control cabinet and at the top of the camera pole. Remove all fastening hardware and remove the existing camera and pan, tilt, and zoom mechanisms from the top of the pole. Salvage and store the cameras for pick up by the department; contact maintenance staff at (414) 227-2166 at the department's Statewide Traffic Operations Center to coordinate when the materials will be picked up.

The contractor may request a meeting with the engineer to assess the condition and operability of the camera before beginning work on removing the camera. Any damage or improper operation not noted at the meeting, or before the contractor starting work on the removal, will be assumed to be the fault of the contractor; repair or replace the camera. Store the camera until the department picks up the camera.

D Measurement

The department will measure Removing CCTV Camera by the unit, acceptably and completely removed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
677.9200.S	Removing CCTV Camera	EACH

Payment is full compensation for removing an existing CCTV camera; for disconnecting all necessary cables and wiring; and properly storing the materials.

stp-677-902 (20100630)

216. stp-678-010 Install Overhead Freeway DMS Full Matrix, Item 678.0100.S.

A Description

This special provision describes installing a state-furnished, or an existing salvaged, dynamic message sign on a new sign structure.

B Materials

The department will provide the sign, or it will be salvaged, controller, and the control cable. The control cable will be multi-mode fiber optic cable.

Use an AWG #6 copper wire or equivalent bonding straps to bond the sign and cabinet to the structure. Use an AWG #6 solid, bare copper wire to bond the sign structure to ground rods.

1. For the three wires carrying 120/240 VAC power from the cabinet to the sign, use single conductor, stranded copper, 120/240 VAC, XLP insulated, USE rated wire. Size the wire to carry the maximum amperage permitted by the main breakers in the sign.

Provide a 100-amp 120/240-VAC load center in the controller cabinet, along with breakers recommended by the sign manufacturer.

C Construction

Install the load center so that the main breakers control all power to the sign and cabinet. Provide at least three branch circuits, one for the sign, one for the controller and communication equipment, and one for all cabinet accessories, such as fan, light, and heater. Only protect the branch serving the controller and communication equipment with the second stage of the surge protector. Connect the power and control cables according to the manufacturer's recommendations. Run the cables in rigid metallic conduit or flexible metallic conduit, or combination of these, within the sign structure.

Bond the bottom of the sign structure to one or more ground rods. Use exothermic welding at each end of the ground wire, unless the steel structure has a suitable grounding lug. Use a device that measures resistance to ground using the three-point fall-of-potential method to ensure that the resistance from the sign's ground bar to ground does not exceed 4 ohms. Add more ground rods if necessary to achieve this requirement.

D Measurement

The department will measure Install Overhead Freeway DMS Full Matrix by each sign, acceptably installed and tested.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
678.0100.S	Install Overhead Freeway DMS Full Matrix	EACH

Payment is full compensation for installing and testing the sign and controller; providing cables, conduits, and fittings; for testing the sign; and for transporting materials.

stp-678-010 (20100630)

715-005 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Insert this SPV in any project that requires slip-form pavement.

Also include one of the following Flexural special provisions:

- ***Flexural Strength for Concrete Mix Design (STSP 715-010)***
- ***Concrete Pavement Flexural Strength (Contact BTS – Chad Hayes to discuss this SPV)***

To estimate total incentive dollars use 75% of the project concrete pavement square yardage times the estimated SY cost of the pavement multiplied by 3%.

217. stp-715-005 Optimized Aggregate Gradation Incentive, Item 715.0710.

Description

This special provision describes optional contractor optimized aggregate gradation, optional optimized mixture designs, and associated additional requirements for class 1 concrete used in concrete pavements. Conform to standard specification part 7 and as follows:

Optimized Aggregate Gradation

Replace standard spec 715.2.2 with the following:

A Job Mix Formula (JMF) contains all of the following:

- Proportions for each aggregate fraction conforming to table 1.
- Individual gradations for each aggregate fraction.
- Composite gradation of the combined aggregates including working ranges on each sieve in accordance with table 2.

Submit the target JMF and aggregate production gradation test results to the engineer for review 10 business days before initial concrete placement.

TABLE 1 TARANTULA CURVE GRADATION BAND

SIEVE SIZES	PERCENT RETAINED
2 in.	0
1 1/2 in.	≤ 5
1 in.	≤16
3/4 in.	≤ 20
1/2 in.	4-20
3/8 in.	4-20
No. 4	4-20
No. 8[1]	≤12
No. 16[1]	≤12
No. 30[1] [2]	4-20
No. 50 [2]	4-20
No. 100 [2]	≤10
No. 200 [2]	≤ 5.0

[1] Minimum of 15% retained on the sum of the #8, #16, and #30 sieves.

[2] Conform to 24-34% retained of fine sand on the #30-200 sieves.

TABLE 2 JMF WORKING RANGE

SIEVE SIZES	WORKING RANGE[1] (PERCENT)
2 in.	+/- 5
1 1/2 in.	+/- 5
1 in.	+/- 5
3/4 in.	+/- 5
1/2 in.	+/- 5
3/8 in.	+/- 5
No. 4	+/- 5
No. 8	+/- 4
No. 16	+/- 4
No. 30	+/- 4
No. 50	+/- 3
No. 100	+/- 2
No. 200	+/- 2

[1] Working range limits of composite gradation based on moving average of 4 tests.

Replace standard spec 710.5.6 with the following:

Determine the complete gradation, including P200, using a washed analysis for both fine and coarse aggregates. Test each stockpile for each component aggregate once per 1,500 cubic yards during concrete production.

Take samples by one of the following sampling methods:

1. At the belt leading to the weigh hopper.
2. Working face of the stock piles at the concrete plant if approved by the engineer.

The department will take independent QV samples using the same sampling method the contractor uses for QC sampling. QV samples may be taken by the contractor's QC personnel if witnessed by the department's QV personnel. The department will split each QV sample and retain half for all dispute resolutions. If QV test results conform to the specification, the department will take no further action. If QV test results are nonconforming, add the QV to the QC test results as if it were an additional QC test.

If, during concrete production, the moving average of four for any sieve fall outside the allowable JMF working range do the following:

1. Notify the engineer of the test results within 1 business day from the time of sampling.
2. Make immediate adjustments to the JMF, within the limits specified in Table 3;
3. Review JMF adjustments with the engineer. Both the contractor and engineer will sign the adjusted JMF if the adjustments comply with Table 3.
4. If the moving average of four falls outside the adjusted allowable working range, stop production and provide a new mix design including JMF to the engineer.

TABLE 3 ALLOWABLE JMF ADJUSTMENTS

SIEVE SIZES	ALLOWABLE ADJUSTMENT (PERCENT)
≥ No. 4	+/- 5
No. 8 – No. 30	+/- 4
No. 50	+/- 3
No. 100	+/- 2

Dispute Resolution

The department will resolve disputes as specified in standard spec 106.3.4.3.5 using QV split samples.

Sublot and Lot Size

A sublot consists of up to 1,500 cubic yards. A lot consists of two sublots.

Optimized Concrete Mixtures

The contractor may use a reduced cementitious content for concrete pavement placed if the contractor does the following:

1. Use an optimized aggregate gradation as defined in this special provision.
2. Conform to the additional testing requirements for flexural strength as specified in the contract special provisions.
3. Submit aggregate gradation result records no more than 2 years old when developing the mix design.
4. Determine the volume of voids in the optimized aggregates using ASTM C29.
5. Download and follow the instructions tab of the Optimized Gradation and Mix Design Spreadsheet located at:

   https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/qmp/default.aspx
6. Design an appropriate paste content based upon the Performance-based PCC Mix Design Guide located at:

   https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/qmp/default.aspx
7. Provide a minimum Vpaste/Vvoids of 1.25. (Paste/Void ratio equals the volume of paste divided by the volume of voids.).
8. Evaluate workability of trial batches by following section 6.8 of AASHTO Draft Performance Engineered Concrete Pavement Mixtures Specifications located at:

   https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/qmp/default.aspx
9. Submit trial batch workability results when submitting the mix design.
10. Submit the CP Tech center computer spreadsheet concrete mix design to the engineer for review at least 3 business days before producing concrete.
11. Provide a minimum cement content of 520 pounds per cubic yard, except if using type I, IL, or III cement in a mix where the geologic composition of the coarse aggregate is primarily igneous or metamorphic materials, provide a minimum cement content of 660 pounds per cubic yard.
12. The contractor may use class C fly ash or grade 100 or 120 slag as a partial replacement for cement. For binary mixes use up to 30% fly ash or slag. For ternary mixes use up to 30% fly ash plus slag in combination. Replacement values are in percent by weight of the total cementitious material in the mix.
13. See CMM 8-70.2.2.3 for additional guidance.

Measurement

The department will measure Optimized Aggregate Gradation Incentive by the dollar, for each combined averaged lot of QC test results meeting Table 1.

Payment

The department will pay incentive of 3 percent of the contract unit price for concrete pavement under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
715.0710	Optimized Aggregate Gradation Incentive	DOL

stp-715-005 (20200629)

715-010 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Include this special provision in all contracts using the Optimized Aggregate Gradation Incentive special provision unless the contract already includes the departments "Concrete Pavement Flexural Strength" special provision.

218. stp-715-010 Flexural Strength for Concrete Mix Design.

This special provision describes optional testing requirements for flexural strength during the mix design process. Conform to standard spec part 7 as modified in this special provision.

Add the following to standard spec table 701-2:

TEST	TEST STANDARD
Flexural Strength of Concrete	AASHTO T97

Replace standard spec 715.2.3.1(1) with the following:

(1) Provide both compressive and flexural strength information to demonstrate the strength of the proposed mix design. Use either laboratory strength data for new mixes or field strength data for established mixes as follows:

1. Use at least 5 pairs of cylinders for compressive strength. Demonstrate that the 28-day compressive strength will equal or exceed the 85 percent within limits criterion specified in standard spec 715.5.2.
2. Use at least 5 pairs of beams for flexural strength. Demonstrate that the 28-day flexural strength will equal or exceed 650 psi.

stp-715-010 (20170615)

219. stp-999-005 Seismograph, Item 999.1000.S.

A Description

This special provision describes furnishing seismographs and employing trained operators to monitor construction-induced vibrations on buildings/structures, and submittal of all required documentation.

B Material

Use seismographs conforming to Wisconsin Department of Safety and Professional Services (SPS) 307.43, Wisconsin Administrative Code that are continuous data recorders supplied with all the accessories necessary for making vibration and noise monitoring observations.

C Construction

Conduct monitoring procedures conforming to SPS 307.44 and as follows: Take seismograph readings before construction activities to establish an ambient or background index.

During construction, place seismographs to monitor all vibration-inducing construction activities or as the engineer directs. At a minimum utilize one seismograph. If more than one major construction activity per day is taking place, multiple seismographs may be required. Place seismographs on a stable surface within 3 feet of the building/structure nearest to the construction operation. Provide data recorded for each vibration occurrence to the engineer which includes the following:

1. Identification of vibration monitoring instrument used.
2. Description of equipment used by the contractor.
3. Name of qualified observer and interpreter.
4. Distance and direction of recording station from the vibration area.
5. Type of ground at recording station and material on which the instrument is sitting.
6. Peak particle velocity and principal frequency in each component.
7. A dated and signed copy of records of seismograph readings.
8. A comparison of measured seismograph readings to maximum allowable readings identified in SPS 307.43 or as specified in this special provision.

If construction activities generate ground vibration in excess of the peak particle velocity limits as shown in SPS 307.44, stop the construction operation in progress and implement alternate construction methods to produce results within the allowable peak particle velocity limits.

D Measurement

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

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
999.1000.S	Seismograph	LS

Payment is full compensation for furnishing and operating seismographs, operators, and for producing documentation reports

stp-999-005 (20161130)

220. stp-999-010 Crack and Damage Survey, Item 999.1500.S.

A Description

This special provision describes conducting a crack and damage survey of the residences and business located at Enter Location.

This Crack and Damage Survey shall consist of two parts. The first part, performed before construction activities, shall include a visual inspection, digital images, and a written report describing the existing defects in the building(s) being inspected. The second part, performed after the construction activities, shall also include a visual inspection, digital images, and written report describing any change in the building's condition.

B (Vacant)

C Construction

Before any construction activities, thoroughly inspect the building structures for existing defects, including interior and exterior walls. Electronically submit a written report with the inspector's name, date of inspection, descriptions and locations of defects, and digital images. The intent of the written report and digital images is to procure a record of the general physical condition of the building's interior and exterior walls and foundation.

Use a digital camera capable of producing sharp, grain free, high-contrast colored digital images with good shadow details. Label each digital image with the following information:

ID: _____
Building Location: _____
View looking: _____
Date: _____
Photographer: _____

Before the start of any construction activities related to this survey, submit a copy of the written report and digital images to the engineer electronically.

After the construction activities are complete, conduct another survey in the same manner, take digital images, and submit another written report to the engineer electronically.

Instead of digital images, a digital video camera capable of producing sharp, high contrast, colored digital video with good shadow detail may be used to perform this work.

D Measurement

The department will measure Crack and Damage Survey as single complete lump sum unit of work, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
999.1500.S	Crack and Damage Survey	LS

Payment is full compensation for providing the before and after written reports, and for photographs or video.

stp-999-010 (20170615)

221. stp-999-015 Picnic Tables Single Pedestal, Item 999.1800.S.

A Description

This special provision describes providing picnic tables.

B Materials

B.1 Recycled Plastic Planks

Provide planks that meet the following requirements:

1. Planks shall be made from 95% post-consumer or post-industrial recycled type 2 HDPE plastic.
2. Plastic shall be impregnated with finish color and protected with a UV inhibitor to prevent fade.
3. Color shall be dark brown or a shade of dark red brown color, and shall be uniform for all planks within a table unit.
4. Plastic shall be able to sustain normal loadings at temperatures ranging from -26 degrees to 100 degrees Fahrenheit without cracking or excessive warping.

Plastic shall be subject to the approval from the engineer.

B.2 Structural Steel Frame

All steel tubes shall be ASTM A500 Grade B, cold-formed electric resistance welded tubing; all other steel shall be minimum ASTM A36M.

B.3 Hardware

Provide bolts that are galvanized steel carriage-type bolts of the sizes specified on the plan.

B.4 Paint

Use one of the following paint systems: Rust-Oleum 9300 System Heavy-Duty Epoxy finish with a 9334 Zinc Rich primer; Sherwin Williams Hi-Solids Catalyzed Epoxy finish with a Zinc Rich primer; or Devoe Tru-Glaze-3 Epoxy Gloss Coating with a Zinc Rich primer.

C Construction

C.1 Steel Fabrication

All welding of structural steel shall conform to the requirements of these specifications and to AASHTO/AWS D 1.2, under structural steel and angle iron of the Bridge Welding Code.

C.2 Painting

Before painting, clean by sandblasting all metal including miscellaneous structural steel to a SSPC-10, commercial blast finish.

Paint all metal with an epoxy paint over a zinc rich primer. Use printer and finish coat paint that is from the same manufacturer and primer recommended for use with finish coat.

Shop-apply the primer and the first coat. Field-apply the second finish coat after erection of the picnic table.

Perform all painting in strict compliance to the paint manufacturer's instructions for surface preparation and application requirements.

D Measurement

The department will measure Picnic Tables Single Pedestal as a unit, completed according to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
999.1800.S	Picnic Tables Single Pedestal	EACH

Payment is full compensation for constructing, furnishing, hauling, installing tables; and painting.

stp-999-015 (20030820)

222. stp-999-150 Bicycle Rack Asphalt or Concrete-Mounted, Item 999.1950.S.

A Description

This special provision describes providing bicycle racks on an asphaltic or concrete surface as the plans show.

B Materials

B.1 General

Provide a steel bicycle rack that has been manufactured specifically for use as a bicycle parking rack.

The bicycle rack shall be hot-dipped galvanized, or TGIC (triglycidyl isocyanurate) powder-coated, or plastic-coated. Steel anchors, and miscellaneous hardware shall be hot-dipped galvanized. For powder-coated or plastic-coated racks, provide one of the following colors: midnight blue, black, hunter green, forest green, Lexington blue, patriot blue, RAL 5005, RAL 3003, or RAL 6005.

The bicycle rack base shall have flanges, rails, or tubes that allow the rack to stand upright and can be bolted or screwed in place.

B.2 Hanger Style Racks

B.2.1 Bicycle Racks Loaded from One Side

The hanger-style bicycle rack shall be designed to park at least three bicycles with arms offset, or centered, in such a manner so that the rack will be loaded from one side by bicyclists. Bicycle spacing shall be 24 inches or more. Pad shall accommodate space on one side of rack according to the manufacturer's specification to allow bikes to be locked to the receiving side of rack and for bicyclists to access that side of rack when racks are full of bikes. This typically requires 8-feet to 9-feet of clearance on the receiving side of rack measured from the center post (the post to which the hangers are attached).

Furnish a bike rack that is on the department's approved product list under "Hanger Style Racks Loaded from One Side."

B.2.2 Bicycle Racks Loaded from Two Sides

The hanger-style bicycle rack shall be designed to park at least five bicycles with arms offset, or centered, in such a manner so that the rack will be loaded from two sides by bicyclists. Pad shall accommodate space on both sides of rack according to the manufacturer's specification to allow bikes to be locked to both sides of rack and for bicyclists to access both sides of rack when racks are full of bikes. This typically requires 8-feet to 9-feet on both sides of the rack measured from the center post (the post to which the hangers are attached).

Furnish a bike rack that is on the department's approved product list under "Hanger Style Racks Loaded from Two Sides."

B.2.3 Inverted-U Style Racks

This rack resembles an upside-down letter "U" when installed. Bikes can be locked to both sides of the inverted U. Pad shall accommodate access space along one side of the rack assembly (perpendicular to the inverted U's) according to the manufacturer's specification to allow bikes to be locked to both sides of the inverted U racks and for bicyclists to access the rack assembly when individual U racks are full of bikes. Do not place the rack assembly too close to a wall or other obstruction, negating the ability for bikes to be properly centered on the inverted U racks.

Furnish a U-racks that is on the department's approved product list under "Inverted-U Style Racks." For this listing, three of the inverted U's have been placed on stringers or rails to accommodate up to six bicycles.

C Construction

Install rack with enough clearance to allow bicyclists to load their bikes from one side or both sides, based on style of rack, and according to the manufacturer's specifications.

Secure the rack to asphalt surface with anchor bolts or screws according to the manufacturer's recommendations.

D Measurement

The department will measure Bicycle Rack Asphalt or Concrete-Mounted by the unit in place, acceptably furnished and installed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
999.1950.S	Bicycle Rack Asphalt or Concrete-Mounted	EACH

Payment is full compensation for furnishing and installing the bicycle rack including all mounting hardware.

stp-999-150 (20080902)