**Special Provisions**

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**STSP’S Revised June 18, 2019**

**SPECIAL PROVISIONS**

1. General.

Perform the work under this construction contract for Project 1007-12-78, Illinois State Line – Madison, USH 12/18 INTCHG/CORE NB/EARLY WORK, Dane County, Wisconsin as the plans show and execute the work as specified in the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, 2020 Edition, as published by the department, and these special provisions.

If all or a portion of the plans and special provisions are developed in the SI metric system and the schedule of prices is developed in the US standard measure system, the department will pay for the work as bid in the US standard system.

100-005 (20190618)

1. Scope of Work.

The work under this contract shall consist of grading, embankment construction, base aggregate, select crushed material, concrete pavement, HMA pavement, concrete barrier, guardrail, culvert pipe, storm sewer, structures B-13-467, B-13-729, B-13-730, B-13-731, B-13-732, retaining walls R-13-334, R-13-348, R-13-349, R-13-350, R-13-351, R-13-352, erosion control, traffic control items, and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.

104-005 (20090901)

1. Prosecution and Progress.

Begin work within 10 calendar days after the engineer issues a written notice to do so.

Provide the start date to the engineer in writing within a month after executing the contract but at least 14 calendar days before the preconstruction conference. Upon approval, the engineer will issue the notice to proceed within 10 calendar days before the approved start date.

To revise the start date, submit a written request to the engineer at least 2 weeks before the intended start date. The engineer will approve or deny that request based on the conditions cited in the request and its effect on the department’s scheduled resources.

The contract time for completion is based on an expedited work schedule and may require extraordinary forces and equipment. The contract completion date indicates that work efforts will possibly require multiple or concurrent controlling operations to occur at the same time. This information is included to assist the contractor and its subcontractors and shall not be interpreted as a demonstration of specified means and methods or work periods other than a completion date.

The contractor is advised that there may be multiple mobilizations for such items as erosion control, traffic control, detours, signing items, temporary pavement markings and other incidental items related to the staging. The department will make no additional payment for said mobilizations.

IH 39 and USH 12 are oversize-overweight (OSOW) routes. Maintain access along IH 39 and USH 12 (or approved detour routes when in place) for all OSOW movements during all stages of construction.

Conform the schedule of operations to the construction staging as shown in the traffic control plans and as described herein unless modifications to the schedule are approved in writing by the engineer.

When engaged in roadway cleaning operations, use equipment having vacuum or water spray mechanisms to eliminate the dispersion of particulate matter into the atmosphere. If vacuum equipment is employed, it must have suitable self-contained particulate collectors to prevent discharge from the collection bin into the atmosphere.

See the “Other Contracts” article of these special provisions for concurrent work being completed by others under Project 1007-12-74/75 and Project 1007-12-79/80.

Permitted overnight lane closure times are detailed in the “Traffic” article of these special provisions.

Lane closures during overnight hours along northbound and southbound IH 39 for access into/out of all work areas shall be coordinated with Project 1007-12-74/75 and 1007-12-79/80. Lane closures are not permitted without the approval of the engineer for both projects.

The department anticipates that the schedule for each stage shall be as follows, unless modifications are approved in writing by the engineer:

**Southbound IH 39 and Northbound IH 39 Ramp to Westbound USH 12**

Prior to starting work, place traffic control devices and temporary concrete barrier (CBTP) along the median shoulder of southbound IH 39 and the shoulders of the northbound IH 39 ramp to USH 12 westbound as detailed in the plans.

**Work Area 1**

The following work is to be completed in Work Area 1 as detailed in the plans:

* Embankment construction, base course, and storm sewer.
* Construction of the B-13-467 integral pier column/barrier, B-13-729 south abutment, and bridge retaining wall R-13-348.
* Construction of the R-13-334 median retaining wall. Note the median wall can initially only be constructed to approximately Station 2544+00 due to concurrent Project 1007-12-74/75 which will utilize a portion of the median shoulder for traffic staging. The remainder of R-13-334 and the associated median barrier wall can be constructed after the concurrent project is done using the shoulder.

Construction traffic entry into Work Area 1 is only allowed as follows:

* From the closed southbound IH 39 loop ramp to eastbound USH 12 (anytime).
* From the widened shoulder along eastbound USH 12 with a nighttime lane closure.
* From westbound USH 12 anytime using both the closed westbound USH 12 to southbound IH 39 and southbound IH 39 to eastbound USH 12 loop ramps.
* From northbound or southbound IH 39 with a nighttime lane closure (with prior approval).

Construction traffic is only allowed to exit Work Area 1 as follows:

* By way of eastbound USH 12 (anytime) utilizing the long term lane closure as seen in Stage 2 of the plans.
* By way of southbound IH 39 during a nighttime lane closure (with prior approval).
* Exiting Work Area 1 by way of northbound IH 39 is not allowed at any time.

If the contractor utilizes eastbound USH 12 to enter/exit Work Area 1, traffic staging prior to access is as follows and as detailed in the plans:

* Stage 1A: Construct temporary widening along the median side of eastbound USH 12 utilizing nighttime single lane closures. Place CBTP as shown in the plans.
* Stage 1B: Construct temporary widening along the outside of eastbound USH 12 utilizing nighttime single lane closures in each direction. Place CBTP as shown in the plans.
* Stage 2: Place temporary pavement markings and shift the 3 lanes of eastbound USH 12 traffic toward the median side of eastbound USH 12, utilizing the temporary widening constructed in Stage 1A. The 2 left lanes will be utilized as “exit only” lanes to northbound IH 39; the right lane will carry eastbound USH 12 through traffic. Close the southbound IH 39 loop ramp to eastbound USH 12.

**Work Area 2**

The following work is to be completed in Work Area 2 as detailed in the plans:

* Embankment construction, base course, and storm sewer.
* Construction of the B-13-729 north abutment and bridge retaining wall R-13-349; and the B‑13‑730 south abutment and bridge retaining wall R-13-350.

Construction traffic entry into Work Area 2 is only allowed as follows:

* From a closed median (left travel) lane of westbound USH 12 (anytime).
* From southbound IH 39 during a nighttime lane closure (with prior approval).
* Access to Work Area 2 is not allowed from eastbound USH 12 or from northbound IH 39 at any time.

Construction traffic is only allowed to exit Work Area 2 as follows:

* By way of a closed median (left travel) lane of westbound USH 12 (anytime)
* By way of southbound IH 39 during an overnight lane closure (with prior approval).
* Exiting Work Area 2 by way of northbound IH 39 or eastbound USH 12 is not allowed at any time.

If the contractor utilizes westbound USH 12 to enter/exit Work Area 2, traffic staging prior to access is as follows and as detailed in the plans:

* Stage 1: Construct shoulder widening along the median side of westbound USH 12 utilizing nighttime single lane closures. Place CBTP as shown in the plans.
* Stage 2: Place temporary pavement markings and shift traffic toward the outside of westbound USH 12, utilizing the shoulder widening constructed in Stage 1.

**Work Area 3**

The following work is to be completed in Work Area 3 as detailed in the plans:

* Embankment construction, base course, and storm sewer.
* Construction of the B-13-730 north abutment and bridge retaining wall R-13-351; and the B‑13‑731 south abutment and bridge retaining wall R-13-352.

Construction traffic entry into Work Area 3 is only allowed as follows:

* From a closed outside (right travel) lane of westbound USH 12 (anytime).
* From southbound IH 39 during a nighttime lane closure (with prior approval).
* Access to Work Area 3 is not allowed from the northbound IH 39 ramp to westbound USH 12 ramp at any time.
* Access to Work Area 3 is not allowed from northbound IH 39 at any time.

Construction traffic is only allowed to exit Work Area 3 as follows:

* By way of a closed outside (right travel) lane of westbound USH 12 (anytime).
* By way of closed westbound USH 12 loop ramp to southbound IH 39 (anytime).
* By way of southbound IH 39 during an overnight lane closure (with prior approval).
* Exiting Work Area 3 by way of northbound IH 39 or the northbound IH 39 ramp to westbound USH 12 is not allowed at any time.

If the contractor utilizes westbound USH 12 to enter/exit Work Area 3, traffic staging prior to access is as follows and as detailed in the plans:

* Stage1: Construct shoulder widening along the outside of westbound USH 12 utilizing nighttime single lane closures in each direction. Place CBTP as shown in the plans.
* Stage 2: Place temporary pavement markings and shift traffic toward the median side of westbound USH 12, utilizing the shoulder widening constructed in Stage 1. Close the westbound USH 12 ramp to southbound IH 39.

**Work Areas 4 and 5**

The following work is to be completed in Work Area 4 as detailed in the plans:

* Embankment construction, base course, and storm sewer.
* Construction of the B-13-731 north abutment, and the B‑13‑732 south abutment.

The following work is to be completed in Work Area 5 as detailed in the plans:

* Embankment construction, base course, and storm sewer.
* Construction of the B-13-732 north abutment.

Construction traffic entry into Work Areas 4 and 5 is only allowed as follows:

* From Femrite Drive (anytime).
* From northbound or southbound IH 39 during a nighttime lane closure (with prior approval).
* Access to Work Area 4 is not allowed from the northbound IH 39 ramp to westbound USH 12 ramp at any time.

Construction traffic is only allowed to exit Work Area 4 and Work Area 5 as follows:

* By way of Femrite Drive (anytime).
* By way of northbound or southbound IH 39 during an overnight lane closure (with prior approval).
* Exiting Work Area 4 by way of the northbound IH 39 ramp to westbound USH 12 is not allowed at any time.

If the contractor utilizes Femrite Drive to enter/exit Work Area 4 and Work Area 5, traffic staging prior to access is as follows and as detailed in the plans:

* Stage1: Construct shoulder widening along eastbound and westbound Femrite Drive utilizing a full roadway closure. Place CBTP as shown in the plans.
* Stage 2: Place temporary pavement markings and reopen Femrite Drive to traffic.

**Retaining Wall Structure R-13-334**

Project 1007-12-75 will be constructed concurrently with this project, and will utilize the existing southbound IH 39 shoulder and place temporary widening along the southern section of retaining wall structure R-13-334. Once Project 1007-12-75 no longer requires the use of the shoulder and temporary widening along the southern portion of structure R-13-334 (anticipated in mid-July 2020), the remainder of the retaining wall structure can be constructed. The temporary widening placed under Project 1007-12-75 will be removed under that project (anticipated in October 2020). Contractor coordination with Project 1007-12-75 is required.

**Bridge Deck Polymer Overlays and Concrete Structure Approach Slabs**

The application of polymer overlays on B-13-729, B-13-730, B-13-731, and B-13-732 is required following the required minimum 28‑day cure of each new bridge deck.

Completion of the bridge deck polymer overlays (temperature dependent) and concrete structure approach slabs (to allow for settlement) shall be done in spring of 2021. Coordination will be necessary with concurrent Project 1007-12-79/80.

The engineer will need to coordinate with Dave Kiekbusch at Bureau of Structures prior to placing the polymer overlay placement on B-13-729 in the spring of 2021 ([david.kiekbusch@dot.wi.gov](mailto:david.kiekbusch@dot.wi.gov), 608-266-5084). BOS will conduct an inspection of the deck prior to the placement of the polymer overlay. Allow ample time for the necessary coordination and inspection to be completed when scheduling the polymer overlay.

Access to the bridge deck polymer overlays and concrete structure approach slabs is allowed as follows and as detailed in the plans:

* By way of Femrite Drive with contractor flagging (anytime). Flagging is not necessary if CBTP is in place for Project 1007-12-79/80.
* By way of northbound or southbound IH 39 during an overnight lane closure (with prior approval).
* Direct access to the structures by way of USH 12 or any of the interchange ramps is not allowed.

**Cross Culverts**

The culverts crossing eastbound USH 12 at Station 103+25’XEB’, westbound USH 12 at Station 201+60’XWB’, and the northbound IH 39 ramp to westbound USH 12 at Station 21+04’XL’ shall be constructed prior to placing fill in Work Areas 1 through 4 to maintain drainage. Eastbound USH 12 and the northbound IH 39 ramp to westbound USH 12 shall utilize Special High Early Strength concrete during overnight closures. Lane and freeway closure times are specified in “Traffic” article under Permitted Lane Closure Times.

**Staging**

Do not switch traffic over to the next construction stage unless all signing, pavement marking, reflectors, concrete barrier temporary precast, and traffic control drums for the stage are in place, and conflicting pavement markings and signs are removed as shown in the traffic control plans and as directed by the engineer.

Immediately upon completion of each Work Area, complete the following (as applicable to each Work Area):

* Remove CBTP along USH 12, Femrite Drive, and ramps.
* Remove temporary pavement markings and place permanent pavement markings.
* Remove traffic control signs, and replace and/or uncover permanent signs.
* Reopen ramps to traffic.
* Return traffic to its normal lane configurations.

**Work Restrictions**

Do not close traffic lanes on IH 39, eastbound USH 12, or Femrite Drive outside of Permitted Lane Closure Times specified in the “Traffic” article of these special provisions. Assessment per the “Lane Rental Fee Assessment” article will be charged for lane closures outside of the Permitted Lane Closure Times.

A 2-foot minimum paved shoulder shall be maintained on IH 39 at all times adjacent to travel lane. No aggregate shoulders shall be permitted adjacent to travel lanes at any time. During the nighttime lane closure for shoulder work on IH 39, the existing shoulder pavement within 2 feet of the travel lane shall not be removed until the shoulder can be paved within the same night.

The engineer will suspend work activities during any work operation, lane or ramp closures in the event that undesirable traffic congestion develops that potentially could cause lengthy traffic delays or unsafe working conditions.

**Contractor Coordination**

The prime contractor shall have a superintendent or designated representative on the job site during all controlling work operations, including periods limited to only subcontractor work operations, to serve as a primary contact person and to coordinate all work operations.

Hold progress meetings once a week for Project 1007-12-78. These meetings will take place at the engineer’s field office. The contractor’s superintendent or designated representative and subcontractor’s representatives for ongoing subcontract work or subcontractor work expected to begin within the next 2 weeks are to attend and provide a written schedule of the next week(s)’ operations. Include begin and end dates of specific prime and subcontractor work operations including lane closures and traffic switches. Invite representatives from the utilities, Town of Blooming Grove, City of Madison, and Dane County Sheriff’s Department to attend the progress meetings. Agenda items at the meeting will include review of the contractor’s schedule and subcontractors’ schedule, utility conflicts and relocation schedule, evaluation of progress and pay items, and making revisions if necessary. Plans and specifications for upcoming work will be reviewed to prevent potential problems or conflicts between contractors.

Modifications to the traffic control plan may be required by the engineer to be safe and consistent with adjacent work by others.

It is expected that routine maintenance by the county and local municipalities may be required at certain times concurrently with work being done under this contract.

Based on the progress meeting, if the engineer requests a new revised schedule, submit it within 7 calendar days. Failure to submit a new schedule within 7 days shall result in the engineer holding pay requests until received.

**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 Erosion Control Implementation Plan (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.

**Interim and Final Completion of Work**

The southbound IH 39 loop ramp to eastbound USH 12 may be closed one time for up to 100 consecutive calendar days to access Work Area 1. If the contractor fails reopen the southbound IH 39 loop ramp to eastbound USH 12 after 100 calendar days, the department will assess the contractor $8,000 in interim liquidated damages for each calendar day that the ramp remains closed after 100 calendar days. An entire calendar day will be charged for any period of time within a calendar day the ramp remains closed beyond 12:01 AM.

The westbound USH 12 loop ramp to southbound IH 39 may be closed one time for up to 100 consecutive calendar days to access Work Area 3. If the contractor fails reopen the westbound USH 12 loop ramp to southbound IH 39 after 100 calendar days, the department will assess the contractor $8,000 in interim liquidated damages for each calendar day that the ramp remains closed after 100 calendar days. An entire calendar day will be charged for any period of time within a calendar day the road remains closed beyond 12:01 AM.

Femrite Drive may be closed for up to 5 calendar days to erect and remove deck form work, place bridge girders, asphalt paving operations, and other associated work. If the contractor utilizes more than 5 calendar days, the department will assess the contractor $1,875 in interim liquidated damages for each calendar day that the road remains closed after 5 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.

Complete construction operations and all work, with the exception of the bridge deck polymer overlays and concrete structure approach slabs, prior to 12:01 AM on November 25, 2020. If the contractor fails to complete all work, except as noted above, prior to 12:01 AM on November 25, 2020, the department will assess the contractor $15,000 in interim liquidated damages for each calendar day the work remains incomplete after 12:01 AM on November 25, 2020. 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.

Complete the bridge deck polymer overlays and concrete pavement approach slabs on structures B‑13‑729, B‑13-730, B‑13-731, and B-13-732 prior to 12:01 AM on May 28, 2021. If the contractor fails to complete the bridge deck polymer overlays and concrete pavement approach slabs prior to 12:01 AM on May 28, 2021, the department will assess the contractor $15,000 in liquidated damages for each calendar day that the work remains incomplete. 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.

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.

1. Traffic.

**General**

Accomplish the construction sequence, including the associated traffic control as detailed in the Construction Staging section of the plans, and as described in this article.

Do not begin or continue any work that closes traffic lanes outside the permitted lane closure times specified in this article.

Any revisions to traffic control plans shall adhere to article 'Notice to Contractor, Revisions to Traffic Control Plans” of these special provisions.

IH 39 will remain open to through traffic at all times for the duration of this project except for nighttime lane closures. Single lane operation on IH 39 is only allowed during Permitted Lane Closure Times with approval of the engineer. Lane closures shall be according to the traffic control plans and shall have the approval of the engineer and the Traffic Management Center (414‑227-2142).

The contractor is responsible for coordinating with the following school districts to ensure that bus routes are maintained and accessible throughout construction.

Madison Metropolitan School District

Madison Metro Transit

(608) 266-4904

McFarland School District

Nelson’s Bus Service, Inc.

(608) 205-9040

**Traffic operations during all stages**

* Maintain 2 lanes of traffic in each direction at all times on IH 39.\*
* Maintain traffic on IH 39 and all interchange ramps on a paved concrete or hot mix asphalt surface at all times. Maintain a minimum 2-foot paved shoulder width at all times.
* Maintain a minimum lane width of 12 feet on IH 39 (16-foot minimum clear width when restricted to 1 lane).
* Close the southbound IH 39 loop ramp to eastbound USH 12 one time for up to 100 consecutive calendar days to place embankment, construct B-13-729 (south abutment) and other associated work located within Work Area 1. Traffic will be detoured as designated in the plans.
* Close the westbound USH 12 loop ramp to southbound IH 39 one time for up to 100 consecutive calendar days to place embankment, construct B-13-729 (north abutment) and other associated work located within Work Area 2. Traffic will be detoured as designated in the plans.
* Maintain 3 lanes of traffic at all times on eastbound USH 12 west of the ramp to northbound IH 39.\*
* Maintain 1 lane of traffic at all times on eastbound USH 12 east of the ramp to northbound IH 39.
* Maintain 1 lane of traffic at all times on westbound USH 12\*.
* Close eastbound USH 12 and the USH 12 ramp to northbound IH 39 for a total of up to 3 nights to erect and remove deck formwork, set bridge girders (B-13-729), place storm sewer, and other associated work. Traffic will be detoured as designated in the plans.
* Close westbound USH 12 for a total of up to 3 nights to erect and remove deck formwork, to set bridge girders (B-13-730), place storm sewer, and other associated work. Traffic will be detoured as designated in the plans.\*\*
* Close the northbound IH 39 ramp to westbound USH 12 for a total of up to 5 nights to erect and remove deck formwork, to set bridge girders (B-13-731), place storm sewer, and other associated work. Traffic will be detoured as designated in the plans.\*\* Do not close the ramp when either eastbound or westbound USH 12 are closed.
* Close Femrite Drive for a total of up to 5 days to erect and remove deck form work, place bridge girders (B-13-732), asphalt paving operations, and other associated work. A detour will not be posted. Do not close Femrite Drive when full nighttime closures of eastbound or westbound USH 12 are occurring.

*\* Except during lane closures allowed as specified in the Lane Closures section.*

*\*\* Full closure of traffic lanes and ramps detailed in “Full Interchange Ramp, Femrite Drive, and Lane Closures” section*

Coordinate and stage all construction activities within the areas of local traffic routes, as required to maintain a traveled way conforming to all above requirements.

Use drums and barricades to direct traffic in the work zone and to protect and delineate hazards such as open excavations, abrupt drop-offs, and exposed manholes, inlets, hydrants, etc. The use of such devices shall be incidental to the operation which creates the hazard.

Place roadway signing as detailed on the plans and in conformance to the Manual on Uniform Traffic Control Devices (MUTCD), latest edition. Traffic control shall be completely in place by the end of the working day of a traffic switch.

Do not deliver or store materials and equipment within open travel lanes or ramps during any stage of construction.

Conduct operations in a manner that will cause the least interference to traffic movements.

**Definitions**

The following definitions apply to this contract:

**Lane Closures**

Single lane and shoulder closures on IH 39 may be permitted during permitted lane and shoulder closure times for work required to complete the work activities. During the times when 1 lane is allowed to be closed, a minimum clear width of 16 feet, including the adjacent shoulder shall be maintained at all times. Times listed for permitted lane and shoulder closures include setup and breakdown of any equipment and traffic control devices.

Lane closures along IH 39 will be prohibited 3 hours before, during, and 3 hours after the completion of University of Wisconsin home football games. The overnight lane closure permitted along eastbound USH 12 will also be prohibited three hours before, during, and 3 hours after the completion of University of Wisconsin Badger home football games.

Request approval from the engineer for all lane and shoulder closures according to the “Wisconsin Lane Closure System Advanced Notification” section in this article of the special provisions. Include justification for the lane and shoulder closure and the anticipated duration in the request. A request does not constitute approval. Terminate single lane and shoulder closures at the end of the Permitted Lane Closure Times and Permitted Shoulder Closure Times. Failure to obtain approval or reopen closed lanes or shoulders prior to the required time shall be subject to assessments specified under the article “Lane Rental Fee Assessment”.

Shoulders may be closed if required by the work operation, but the right and left shoulder may not be closed in the same area at the same time.

All lane and shoulder closures shall be removed when work is not in progress.

Provide arrow boards for use during all single lane closures according to the MUTCD. Arrow boards for single lane closures will be paid for under the item Traffic Control Arrow Boards for each day with a single lane closure where an arrow board is in use.

**Full Interchange Ramp, Femrite Drive, and Traffic Lane Closures**

A continuous single closure of the southbound IH 39 loop ramp to eastbound USH 12 is allowed for up to 100 calendar days. Traffic will use the signed detour as detailed in the plans.

A continuous single closure of the westbound USH 12 loop ramp to southbound IH 39 is allowed for up to 100 calendar days. Traffic will use the signed detour as detailed in the plans.

An overnight full closure of the eastbound USH 12 and the eastbound USH 12 ramp to northbound IH 39 is allowed for up to a total of 3 nights from 11:00 pm to 5:00 am, only on Monday through Thursday nights. Traffic will use the signed detour as detailed in the plans.

An overnight full closure of the northbound IH 39 ramp to westbound USH 12 is allowed for a total of up to 5 nights from 11:00 pm to 5:00 am, only on Monday through Thursday nights. Traffic will use the signed detour as detailed in the plans

An overnight full closure of the westbound lanes of USH 12 is allowed for a total of up to 3 nights from 11:00 pm to 5:00 am, only on Monday through Thursday nights. Traffic will use the signed detour as detailed in the plans.

A full closure of Femrite Drive is allowed for up to a total of 5 days. There is no signed detour. Femrite Drive closure is not allowed during any of the full closures of USH 12.

Continuous single lane closures on westbound USH 12 is allowed for the duration of the project.

**Lane and Shoulder Closure Times**

IH 39 and eastbound USH 12 lane and shoulder closures are allowed only at the times in the following tables and text. At all other times all lanes and shoulders shall be fully open to traffic.

The engineer will have the ability to suspend work activities during the periods listed below in the event that undesirable traffic congestion develops that has the potential to cause lengthy motorist delay or unsafe working conditions.

Permitted Lane Closure Times

| **Day of the Week** | **IH 39 and USH 12\*** |
| --- | --- |
| Monday  Tuesday  Wednesday  Thursday | 12:00 AM – 5:00 AM  9:00 PM – 11:59 PM |
| Friday | 12:00 AM – 5:00 AM  10:00 PM – 11:59 PM |
| Saturday  Sunday | 12:00 AM – 7:00 AM  10:00 PM – 11:59 PM |

Continuous single lane closures are planned along eastbound and westbound USH 12 to provide access for construction vehicles. The permitted overnight lane closures noted in the table above cannot be implemented concurrently with the continuous single lane closures.

Lane closures should be continuous when possible. A 2-mile minimum spacing is required where continuous lane closures are not feasible or desirable. Coordinate lane closures with the adjacent Project 1007-12-74/75 immediately to the south (calendar year 2020) and Projects 1007-12-79/80 (calendar year 2021).

Permitted Shoulder Closure Times

Shoulder closures are permitted along IH 39 as indicated in the table below, except that both shoulders in the same direction of travel may not be closed concurrently.

| **Day of the Week** | **IH 39** |
| --- | --- |
| Monday  Tuesday  Wednesday  Thursday | Permitted All Day |
| Friday | 12:00 AM – 1:00 PM  6:00 PM – 11:59 PM |
| Saturday | Permitted All Day |
| Sunday | 12:00 AM – 11:00 AM  4:00 PM – 11:59 PM |

Shoulder closures are permitted along eastbound and westbound USH 12 at any time, except that both shoulders in the same direction of travel may not be closed concurrently.

For all freeway closures, a maximum of 1 lane and 1 shoulder may be closed at any one time at a specific location.

Coordinate with the State Patrol through Jeff Gustafson of the Wisconsin Department of Transportation Madison Office at (608) 516-6400 or [jeffrey.gustafson@dot.wi.gov](mailto:jeffrey.gustafson@dot.wi.gov).

**Roadway Closures**

Place Portable Changeable Message Signs for all lane closures on IH 39, interchange ramps, USH 12, and Femrite Drive as shown on the plans at least 7 days prior to the lane closures, ramp closures and full roadway closures. See paragraph titled “**Full Interchange Ramp, Femrite Drive, and Traffic Lane Closures”**.

All lane and roadway closures are subject to the approval of the Region traffic engineer.

**Advance Notification**

Notify Dane County, Dane County Government Public Safety Communications, Dane County Sheriff’s Department, the City of Madison, and the Town of Blooming Grove 48 hours in advance of the start of work; closure of USH 12, Femrite Drive, and interchange ramps; and prior to significant changes in traffic control. Notifications must be given by 4:00 PM on Thursday for any such work to be done on the following Monday.

Notify the Madison and McFarland School Districts 2 weeks prior to the start of construction and 1 week prior to the daytime closures of Femrite Drive.

Advance notification as described above is considered incidental to the Traffic Control bid item.

**Clear Zone Working Restrictions**

Do not leave any slopes steeper than 3:1 within the clear zone or any drop offs at the edge of the traveled way greater than 2 inches which are not protected by temporary precast barrier. The temporary clear zone for IH 39 is 30 feet.

Do not perform heavy equipment work in the IH 39 median or adjacent to the shoulder at any time unless protected by concrete barrier in both directions except during night work with permitted lane closures.

Store materials or park equipment a minimum of 30 feet from the edge of the IH 39 traveled way. Equipment may be parked in the median if it is protected by concrete barrier.

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

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

After coordinating with department construction field staff, notify Jeff Gustafson at the Southwest Region Madison Office, (608) 516-6400, 3 weeks prior to deploying or changing a message on a PCMS to obtain approval of the proposed message. The department will review the proposed message and either approve the message or make necessary changes.

**Wisconsin Lane Closure System Advance Notification**

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

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

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

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

**Temporary Regulatory Speed Limit Reduction**

During engineer-approved regulatory speed limit reductions, install temporary speed limit signs on the inside and outside shoulders of divided roadways to enhance visibility. On 2-lane 2-way roadways, install temporary speed limit signs on shoulders. When construction activities impede the location of a post-mounted regulatory speed limit sign, relocate the sign for maximum visibility to motorists. If work last less than 7 days, mount the regulatory speed limit sign on a portable sign support.

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

Coordinate with Regional Traffic Section to identify the construction stages that have approved temporary regulatory speed zones documented in a Temporary Speed Zone Declaration. Primary contact phone number: Josh Koebernick (608) 516-6542; secondary contact number: Rich Cannon (608) 516-4331.

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

Notify the engineer and WisDOT Traffic Management Center at (414) 227‑2142 if there are any changes in the schedule, early completions, or cancellations of scheduled work.

The department has the authority to disallow any requested closures or width restrictions.

**Protection of Bridge Pier Columns**

Bridge pier columns are to remain protected at all times throughout construction with concrete barrier temporary precast or guardrail.

**Construction Access**

Restrict work on IH 39 within closed shoulders as allowed by the plans or engineer. All construction access is prohibited from live IH 39 lanes unless a single lane closure is in place and is subject to approval of the engineer.

Construction traffic cannot travel counter-directional adjacent to IH 39 traffic except behind temporary concrete barrier.

The contractor is responsible for temporary culvert pipes, potential temporary shoring, and the construction of access roads into Work Areas throughout the project. The cost of temporary access is borne by the contractor and should be considered incidental to the bid item Traffic Control.

Construction traffic is prohibited from crossing a live-traffic ramp.

**General Access**

U-Turns at existing maintenance crossovers or temporary crossovers between northbound and southbound IH 39 will only be allowed when lane closures are in place for inside northbound and southbound passing lanes.

Construction operations affecting the traveling public’s safety on IH 39 will not be allowed during snow and ice conditions, or any other adverse weather conditions, unless approved by the engineer.

Delivery of equipment to IH 39 requiring the use of a semi-tractor and trailer shall only occur during those hours identified as Permitted Lane Closure Times.

Delivery and removal of materials and equipment via IH 39 shall only take place during nighttime traffic control operations when a lane closure is in place.

Except during bridge deck forming and placement of girders, the contractor shall maintain access for emergency vehicles to pass through the construction site on USH 12, interchange ramps and Femrite Drive. Do not store equipment or materials on Femrite Drive.

1. 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 of these special provisions.

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

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

B Lane Rental Fee Assessment

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

- $10,000 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.

108-065 (20161130)

1. Holiday Work Restrictions.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway or ramps carrying IH 39 or USH 12 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, April 10, 2020 to 6:00 AM Monday, April 13, 2020 for Good Friday and Easter;
* From noon Friday, May 22, 2020 to 6:00 AM Tuesday, May 26, 2020 for Memorial Day;
* From noon Friday, July 3, 2020 to 6:00 AM Monday July 6, 2020 for Independence Day;
* From noon Friday, September 4, 2020 to 6:00 AM Tuesday, September 8, 2020 for Labor Day;
* From 12:00 AM to 11:59 PM Monday, October 12, 2020 for Columbus Day;
* From noon Friday, November 20, 2020 to 6:00 AM Monday, November 23, 2020 for opening weekend of gun deer season;
* From noon Wednesday, November 25, 2020 to 6:00 AM Monday November 30, 2020 for Thanksgiving Day.
* From noon Thursday, December 24, 2020 to 6:00 AM Monday December 28, 2020 for Christmas;
* From noon Thursday, December 31, 2020 to 6:00 AM Monday January 4, 2021 for New Year’s;
* From noon Friday, April 2, 2021 to 6:00 AM Monday, April 5, 2021 for Good Friday and Easter.

107-005 (20181119)

Do not haul materials of any kind along or across any portion of the highway or ramps carrying IH 39 or USH 12 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 periods:

* From 3:00 PM to 7:00 PM on Thursday, April 16, 2020, and from 6:00 AM to 9:00 AM and from 3:00 PM to 7:00 PM on Friday, April 20, 2020 for the Midwest Horse Fair;
* From 6:00 AM to 9:00 AM and from 3:00 PM to 7:00 PM on each day from Monday, August 24, 2020 through Thursday, August 27, 2020 for the Epic Users Group Meeting.

1. Utilities.

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

107-065 (20080501)

There are underground and overhead utility facilities located within the project limits. The contractor shall coordinate their construction activities with a call to Diggers Hotline or a direct call to the utilities that have facilities in the area as required per statutes. The contractor shall use caution to ensure the integrity of the underground facilities and shall maintain code clearances from overhead facilities at all times. Field contact information for utilities is included on the General Notes page of the project plan.

Additional detailed information regarding the location of vacated, relocated, and/or removed utility facilities is available in the work plan provided by each utility company or on the permits issued to them. View these documents at the region WisDOT office during normal working hours.

The following utility owners have facilities within the project area; however, no adjustments are anticipated: ANR Pipeline, ATC Management, City of Madison - Sewer, City of Madison – Street Lighting, Flint Hills Resource, Madison Metropolitan Sewerage District (MMSD), Madison Water Utility, and Wisconsin Department of Administration – Communication Line.

The following utility owners has facilities within the project area; adjustments are anticipated:

**AT&T Wisconsin**

AT&T Wisconsin has underground facilities along Femrite Drive within the project area.

The utility proposes to relocate their facilities in a shared trench with Charter Communications, City of Madison, Madison Gas and Electric, and Metropolitan Unified Fiber Network (MUFN) under Femrite Drive. It is anticipated that this work will be completed prior to the start of construction.

**Charter Communications**

Charter has underground facilities along Femrite Drive within the project area.

The utility proposes to relocate their facilities in a shared trench with AT&T Wisconsin, City of Madison, Madison Gas and Electric, and Metropolitan Unified Fiber Network (MUFN) under Femrite Drive. It is anticipated that this work will be completed prior to the start of construction.

**City of Madison – Communication Line**

City of Madison has underground facilities along Femrite Drive within the project area.

The utility proposes to relocate their facilities in a shared trench with AT&T Wisconsin, Charter Communications, Madison Gas and Electric, and Metropolitan Unified Fiber Network (MUFN) under Femrite Drive. It is anticipated that this work will be completed prior to the start of construction.

**Madison Gas and Electric – Electric**

Madison Gas and Electric has an existing underground facility crossing IH 39 at Station 2533+72, and an existing overhead facility crossing IH 39 along the south side of Femrite Drive.

The utility proposes to relocate their facilities in a shared trench with AT&T Wisconsin, Charter Communications, City of Madison, and Metropolitan Unified Fiber Network (MUFN) under Femrite Drive. It is anticipated that this work will be completed prior to the start of construction.

**Madison Gas and Electric – Gas**

Madison Gas and Electric has an existing underground facility crossing IH 39 along the south side of Femrite Drive at Stations 2582+26 and 2582+41.

The utility proposes to relocate their facilities in a shared trench with AT&T Wisconsin, Charter Communications, City of Madison, and Metropolitan Unified Fiber Network (MUFN) under Femrite Drive. It is anticipated that this work will be completed prior to the start of construction.

**Metropolitan Unified Fiber Network (MUFN)**

Metropolitan Unified Fiber Network (MUFN) has underground facilities along Femrite Drive within the project area. The City of Madison maintains this facility.

The utility proposes to relocate their facilities in a shared trench with AT&T Wisconsin, Charter Communications, City of Madison, and Madison Gas and Electric under Femrite Drive. It is anticipated that this work will be completed prior to the start of construction.

**Wisconsin Department of Transportation – Communication Line**

Wisconsin Department of Transportation has an existing underground facility crossing IH 39 at Station 2533+98; however, no adjustments are anticipated.

There is an existing underground facility along the southbound IH 39 loop ramp to eastbound USH 12, as well as along the south side of USH 12. The utility proposes to relocate their facilities prior to construction.

There is an existing underground facility crossing IH 39 south of Femrite Drive. The utility proposes to relocate their facilities prior to construction; however, no adjustments are anticipated.

Wisconsin Department of Transportation has other existing underground facilities within project area; however, no conflicts are anticipated.

1. Other Contracts.

Modifications to the traffic control plan may be required by the engineer to be safe and consistent with adjacent work by others.

It is expected that routine maintenance by the county and local municipalities may be required at certain times concurrently with work being done under this contract

The following contracts are anticipated to be under construction within the time period of the contract, unless otherwise indicated:

**Project 1007-12-74/75:**

This project will begin in the fall of 2019 and continue through the fall of 2020, and is located between CTH AB (south of USH 12) and the southern limits of Project 1007-12-78 in Dane County. The project will reconstruct both the northbound and southbound roadways of IH 39, as well as the northbound bridge over Siggelkow Road (B-13-728). In spring of 2020, all IH 39 traffic will be placed on the existing northbound roadway in a counter-directional pattern while the southbound roadway is reconstructed (anticipated duration March – June). In summer 2020, all IH 39 traffic will be moved to the new southbound lanes in a counter-directional pattern while the northbound roadway and bridge are reconstructed (anticipated duration July – November). A crossover will be constructed immediately south of Project 1007-12-78. Coordination will be required for placement of advance warning signs, traffic control, anticipated lane closures, and placement of storm sewer, median barrier wall, retaining walls, and temporary traffic lanes located within this overlap of these projects.

**Project 1007-12-79/80:**

This project will begin in the spring of 2021 and continue through the fall of 2021, and has the same project limits as 1007-12-78, between the agriculture ditch and the WSOR Railroad overpass structures in Dane County. The project will place the final pavement structure (base aggregate and concrete pavement) for the new northbound roadway through the IH 39 interchange at USH 12, widen shoulders, realign ramps, widen the existing northbound and southbound structures over Femrite Drive, and repair the existing concrete pavement. Coordination will be required for placement of advance warning signs, traffic control, anticipated lane closures, and work along IH 39 north of Femrite Drive expected to occur in spring of 2021.

1. Contract Award and Execution.

*Supplement standard spec 103 as follows:*

**103.9 Mobilization Workshops**

**103.9.1 Workshop Schedule**

After contract award, attend the following workshops. Each workshop is described below and will include but not be limited to the topics outlined below.

|  |  |
| --- | --- |
| **Workshop** | **Timeframe** |
| Initial Work Plan (IWP) | Prior to Notice to Proceed (NTP) |
| Cost Reduction Incentive & Submittals | Prior to preconstruction meeting |
| Utility Coordination | Prior to preconstruction meeting |
| Baseline CPM Progress Schedule | After NTP & submittal of Baseline CPM Progress Schedule |
| Work Force Opportunities | Day of preconstruction meeting |

The workshop dates will be scheduled by the engineer after contract award. The engineer may modify the original workshop schedule to ensure attendance by the necessary department and contractor personnel. Workshops may be scheduled earlier than specified if agreed to by all parties. Workshops may be deleted and/or combined depending on the complexity and requirements of the project.

**103.9.2 Workshops**

**103.9.2.1 Initial Work Plan**

**103.9.2.1.1 General**

The Initial Work Plan workshop will provide a forum to discuss and answer questions relative to the proposal, bid schedule, and other questions in the Project Questionnaire described in standard spec 103.9.2.1.2. The Initial Work Plan Workshop will include:

* Contractor responses to the attached Project Questionnaire.
* Department presentation of the use of CPM scheduling on the project.
* Contractor presentation of the conceptual work plan for the project.
* Department and contractor discussion of the level of detail and features in the Initial Work Plan Schedule and the Baseline CPM Progress Schedule.

**103.9.2.1.2 Project Questionnaire**

Provide the following information in the order shown below. This information will constitute the “Project Questionnaire.”

**General Information**

**If a Joint Venture, provide information for each member of the Joint Venture.**

Provide the following information about the company:

* Firm Name
* Address
* Telephone and facsimile numbers; e-mail address
* Contracting Specialties
* Years performing work in contracting specialties
* Geographic areas served
* Total Management Employees and years of service
* Project Managers
* General Superintendents
* Craft Superintendents
* Engineers
* Estimators
* CPM Schedulers

**Construction Engineering**

* Provide/attach a copy of your Construction Project Manager’s resume indicating the manager’s experience in similar major construction projects. The resume shall include similar projects with references. (Note: references are only for verification of work scope performed).
* Provide (if applicable) your third-party construction engineering firms.
* Provide plan for Construction surveying.

**Subcontractors**

* Attach the list of all subcontractors that are intended for this project and the items of work they shall perform.

**Permanent Material Suppliers**

* Attach the list of all permanent material suppliers that are intended for the project.

**Quality Control** (where applicable)

* Provide the name of your Construction Quality Control firm and qualifications indicating the firms’ experience in similar major construction projects. The resume shall include similar projects with references. (Note: references are only for verification of work scope performed).
* Provide/attach a copy of your Construction Quality Control Manager’s resume indicating the manager’s experience in similar major construction projects. The resume shall include similar projects with references. (Note: references are only for verification of work scope performed).
* List the major elements and/or Table of Contents of your Construction Quality Management Program.
* Provide the name of your Independent Quality Control Testing firm (Construction Quality Control Lab) and qualifications indicating the firm’s experience in similar major construction projects. The resume shall include similar projects with references. (Note: references are only for verification of work scope performed).

**Organization Chart**

* Provide a functional and personnel Organization Chart showing the authority and responsibilities of each individual identified.

**Work Rules**

* Provide the plan for hours per day, days per week, and number of shifts for key elements of work; i.e. sewer tunnels, retaining wall construction, roadway excavation, bridge structures, and roadway structural section activities.

**Maintenance of Traffic**

* Provide the name of your Traffic Control Manager and qualifications indicating the firm’s experience in similar major construction projects. The resume shall include similar projects with references. (Note: references are only for verification of work scope performed).
* Attach a copy of your Preliminary Schedule indicating your approach to achieving the substantial completion schedule.
* Include an outline of your approach to the maintenance of traffic and how you shall stage the construction to meet the substantial completion schedule including planned locations for local street and freeway access into and out of the work zones for each stage of construction.

**Construction**

* Provide the approach (resources, equipment, suppliers, number of crews, and where required ground support systems) for the following activities:
* Retaining wall construction by type of work
* Bridge demolition
* Roadway structural section
* Roadway excavation
* Underground construction
* Office and yard facilities

**103.9.2.2 Cost Reduction Incentives & Submittals**

The Cost Reduction Incentive (CRI) & Submittals workshop will have 2 primary topics outlined below:

Cost Reduction Incentives

Identify value enhancing opportunities and consider modifications to the plans and specifications that will reduce either the total cost, time of construction or traffic congestion, without impairing, in any manner, the essential functions or characteristics of the project, including, but not limited to, service life, economy of operation, ease of maintenance, benefits to the traveling public, desired appearance, or design and safety standards.

Submit recommendations resulting from the workshop for approval by the engineer as cost reduction incentive proposals in conformance with the provisions in standard spec 104.10 “Cost Reduction Incentive.”

The department and the contractor may be able to complete the CRI Concept process, as specified in standard spec 104.10.2, during the CRI workshop.

Submit CRIs after the CRI workshops that were not introduced at the CRI workshop.

Submittals

The Submittals Workshop will identify the key required submittals for the project, categorize submittals into functional areas, and develop a schedule for submittals, submittal reviews, and material fabrications and deliveries. The workshop participants will at a minimum:

1. Review the project special provisions.

2. Categorize submittals into functional areas including but not limited to:

* + MSE Retaining Walls
  + Temporary Shoring
  + Falsework and Formwork
  + Girder Shop Drawings, Fabrication, and Delivery Dates
  + Steel Transportation, Delivery, and Erection
  + Structure Demolition Plans
  + Pile Hammers and High Capacity Piling
  + Concrete/ Asphalt
  + Materials
  + ITS / Lighting
  + Traffic Signals
  + Sanitary Sewer and Water
  + Permits

3. Develop a schedule for submittals. Submittal schedule data shall be incorporated into CPM progress schedule to reflect submittal preparation durations and dates, submittal approval durations and dates, and material fabrication periods with forecasted delivery dates. Reference Baseline CPM Progress Schedule in these special provisions.

**103.9.2.3 Utility Coordination**

The Utility Coordination Workshop will define the scope and schedule of utility relocation work and the respective roles and responsibilities of the project team.

1. At a minimum, the following key personnel will attend the Utility Coordination Meeting.

* + Department’s Utility Coordinator
  + Contractor’s Project Manager, Foreman, Supervisor
  + Designer Team’s Utility Coordinator
  + Key Utility Company Representative(s)

2. At a minimum, the Utility Coordination Meeting will include a review of the following:

* + Summary of all required utility relocations on the project
  + Special provisions addressing utility work
  + Sharing of contact information
  + Scheduling of work for utility relocation(s) including critical milestones and staging for the work
  + Contractor’s work schedule and anticipated conflicts with the utility’s construction schedule.

**103.9.2.4 Baseline CPM Scheduling**

At the Baseline CPM Scheduling workshop, provide a presentation of the Baseline CPM Schedule. In the presentation, include a discussion of the anticipated fabrication and delivery durations for long lead material procurements, construction staging and sequencing of the work, understanding of traffic phasing, and application of labor and equipment resources to the work. Address comments raised in the engineer’s review.

**103.9.2.5 Work Force Opportunities**

The Work Force Opportunities workshop will provide a venue for contractors to have meaningful dialogue with TrANS providers regarding the hiring of TrANS graduates. For the prime contractor and the subcontractors, provide staff with hiring authority to participate in a job-matching session during this workshop. The workshop will take place on the same day and in the same location as the pre-construction meeting. The workshop participants will at a minimum:

1. Review contractor hiring processes for general labor positions.

2. Review and listen to presentation provided by TrANS providers regarding the training program including details regarding how contractors can hire TrANS graduates.

3. Review TrANS graduate availability for working on project.

4. Meet one-on-one for at least 2 minutes with each TrANS graduate in attendance at the meeting.

(1/5/2017)

1. 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:

<http://wisconsindot.gov/rdwy/admin/tdm.doc>

105-005 (20151210)

1. 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 Jennifer Grimes at (608) 516-9760.

107-054 (20080901)

1. 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 Mark Sponem at (608) 516-1792. Post the permit in a conspicuous place at the construction site.

107-056 (20180628)

1. Environmental Protection.

Broom or brush any mud, dirt, or debris deposited on any roads, as a result of construction activity at the end of the day and as directed by the engineer.

*Supplement standard spec 107.18 as follows:*

Ensure that all equipment that has been in contact with areas potentially infested with invasive plant species has been decontaminated. Use the following inspection and removal procedures (guidelines from the Wisconsin Department of Natural Resources) for disinfection:

1. Prior to leaving the contaminated site, wash machinery and ensure that the machinery is free of all soil and other substances that could possibly contain exotic invasive species;

2. Clean all equipment with hot water of 105°F to 110°F for a period of 30 minutes or hot water of 140°F for a period of 5 minutes. After cleaning, dry all equipment in a sunny location for at least 3 days.

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

Make equipment available for inspection by the Corridor Vegetation Inspector prior to operating within the planting site limits.

1. 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 5 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.

107-055 (20130615)

1. Environmental Protection, Treatment of Water Adjacent to Wetlands or Waterways.

Spoil material should be stockpiled on uplands an adequate distance from a stream, wetland, and/or any open water created by excavation. Filter fabric silt fence shall be installed between spoil material and the stream or wetland, and between the entire disturbed area and the waterway.

If dewatering is required for any reason, the water must be pumped into a properly sized and constructed settling basin before the clean/filtered water is allowed to enter any waterway or wetland. The “clean/filtered” water must be free of suspended solids and contaminants. A properly designed and constructed settling basin will take into consideration the amount of space for construction, desired pumping speed, number/size of pumps likely to be used, and the sedimentation rate of soils to be encountered. See DNR Technical Standard 1061 for method selection by soil type. The final dewatering plan must be submitted and approved in the ECIP.

The cost of dewatering is considered incidental to construction.

1. Erosion Control.

*Supplement standard spec 107.20 with the following:*

Unless otherwise directed by the engineer at the end of each day, drive a tracked vehicle up and down all untracked or newly graded slopes to reduce the erosive potential of the slopes. The tracks shall be roughly perpendicular to the direction of stormwater runoff flow down the slopes. Upslope tracking is incidental to the cost of grading.

*Delete the last sentence of standard spec 107.20(7) and replace it with the following*:

Provide the permanent erosion control measures immediately after performing grading operations, unless temporary erosion control measures are specified or authorized by the engineer.

(5/14/2013)

1. Public Convenience and Safety.

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

Check for and comply with local ordinances governing the hours of operation of construction equipment. Construction operations will be allowed at night with the exception of the following operations:

Do not perform pile driving between 10:00 PM and 6:00 AM.

1. Native American Hiring.

Pre-Bid

Before bid submittal, contact the Ho-Chunk Nation Department of Labor to provide information on hiring procedures and future employment opportunities, and gather information on the tribal work force.

Ho-Chunk Nation Department of Labor contact information:

Tracy Thundercloud, Executive Director of Labor

PO Box 667

Black River Falls, WI 54615

(715) 284-9343 ext. 1140

[Tracy.Thunderbird@ho-chunk.com](mailto:Tracy.thunderbird@ho-chunk.com)

Maintain documentation of all efforts made to communicate with the Ho-Chunk Nation. Pre-bid, submit documentation in conjunction with the Proposal Request Form to the Bureau of Project Development at:

[DOTDTSDHighwayConstructionContractors@dot.wi.gov](mailto:DOTDTSDHighwayConstructionContractors@dot.wi.gov)

The Eligible Bidders list will not be updated until this documentation is received. Include the following information in documentation:

* Proposal number/route number/termini/county
* Persons contacted
* Method of communication (phone, email, written, in person)
* Information exchanged (hiring procedures, available positions, referrals received, employee performance, etc.)

After Execution

At a minimum of three days before the tribal coordination meeting, contact the Ho-Chunk Nation to provide the following information regarding available employment opportunities for prime and subcontractors:

* Job classification/trade
* Job qualifications and required skills
* Employment period
* Wage
* Copy of job application

After receiving employment opportunities, the Ho-Chunk Nation will within two business days provide employment referrals or provide other recruitment sources to obtain qualified referrals.

Document all efforts made to communicate job opportunities and the results of hiring activities throughout the life of the contract. At any time during the life of the contract, provide the Ho-Chunk Nation communication documentation within five business days of request by the department.

Tribal Coordination Meeting

Between execution of contract and the project preconstruction conference, setup and coordinate a meeting with the Tribal officials and leaders at the Ho-Chunk Nation and notify and invite WisDOT Statewide Tribal Liaison, 4822 Madison Yards Way, 4th Floor South, P.O. Box 7965, Madison, WI 53707-7965, (608) 267-3849. The prime contractor and all subcontractors shall attend this meeting. Discuss available employment opportunities and other tribal areas of interest such as scope of work, Tribal regulations, borrow sites, waste sites, and available aggregate.

Project Completion

As a part of the document submittals required under standard spec 109.7, submit documentation summarizing communications regarding job opportunities throughout the life of the contract. Provide final report to the tribe and Statewide Tribal Affairs compiling the results of hiring activities for the prime contractor as well as for subcontractors at all tiers.

107-200 (20190618)

1. Notice to Contractor - Construction Safety

*Supplement standard spec 107 as follows:*

**Description**

This specification describes minimum occupational safety and health requirements for the prime contractor and their subcontractors performing work on this project. The fundamental objective of these requirements is to eliminate construction related injuries and incidents so that their associated impacts to workers and the public, budgets and schedules are avoided or minimized.

**Definitions**

**Certified Crane Operator.** To be certified a crane operator one must pass both written and practical tests offered by a nationally accredited testing organization, such as the National Commission for the Certification of Crane Operators (NCCCO) or the Operating Engineers Certification Program (OECP).

**Competent Person.** One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

**Critical Lift.** A critical lift applies to, but is not limited to the following: any crane lift or hoisting operation that exceeds 75 percent of the rated capacity of the crane, requires the use of more than one crane or hoisting device, involves barge-mounted cranes, where the center of gravity could change, lifts where existing outriggers cannot be fully extended due to site constraints, lifts involving multiple lift rigging assemblies or other non‑routine/difficult rigging arrangements.

**Project Safety Officer (PSO).** The person or persons designated by the Department to coordinate implementation of a construction safety management system, including risk assessment, training, evaluating effectiveness, corrective/preventive action, and management review.

**Qualified Person.** One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his/her ability to solve or resolve problems relating to the subject matter, the work, or the project.

**Safety Representative (SR).** A person designated by the contractor to develop and implement the company’s health and safety plan, assess job hazards, and identify and carry out corrective and preventive actions.

**General Requirements**

Notify the department immediately of any agency compliance inspections, including but not limited to the Occupational Safety and Health Administration (OSHA).

Report all project-related fatalities and OSHA-recordable injuries and illnesses that result in inpatient hospitalizations within 8 hours to the Project Safety Officer (PSO). Report all other project-related OSHA-recordable injuries and illnesses monthly to the PSO.

**Safety Representative Requirements**

Provide at least one Safety Representative (SR). Each SR shall perform inspections, safety observations and other safety-related duties on-site on a weekly basis, at a minimum. Provide an alternate SR in the event of illness or other unforeseen circumstances.

Each SR and alternate SR shall have training, knowledge and experience in construction safety and health, including but not limited to a current OSHA 10-hour Occupational Safety and Health Training Course in Construction Safety and Health. Provide evidence of SR certifications, qualifications and training to the PSO.

Each SR and alternate SR shall attend a 2-hour Construction Safety Awareness Training provided by the Department at the beginning of the project and at least once every 2 years. The SR shall communicate and distribute materials provided in the 2‑hour Construction Safety Awareness Training to their site workers prior to starting site construction activities.

**Requirements for Construction Health & Safety Programs**

In addition to implementing programs to meet the requirements of OSHA Construction Safety and Health standards, develop a written safety plan for the work to be performed. Note: General guidance is provided in Section 1-35.1.2 of the Construction and Materials Manual.

**Traffic Control and Vehicle Collision Prevention/Risk Reduction**

All vehicles and mobile equipment shall use high-intensity rotating, flashing, oscillating, or strobe lights in accordance with Section 6G.02 of the Manual of Uniform Traffic Control Devices (FHWA, 2009).

Provide crash cushions or truck (or trailer)-mounted attenuators (TMAs) on shadow vehicles to protect workers, vehicles, and mobile equipment from vehicle collisions in accordance with the Manual of Uniform Traffic Control Devices (FHWA, 2009, Section 6F.86). Coordinate with the engineer at least 72 hours before placing a TMA in service.

**Personal Protective Equipment (PPE)**

Minimum Requirement Personal Protective Equipment (PPE) to be worn in Construction Work Areas:

ASTM F2413-11 safety-toed boots rated for impact and puncture resistance (PR) shall be worn.

ANSI Z-87+ impact-resistant safety glasses with sideshields shall be worn. Requirements for faceshields, goggles, welding shades, etc. shall be determined by the SR.

ANSI Z-89.1 Class G or E hard hats where there is potential for impact or injury to the head.

Daytime Work: ANSI/ISEA 107-2004 Class 2 or 3 high visibility vests at all times and Type E pants for flaggers and other personnel working on the traffic side of concrete barriers (yellow/lime).

Nighttime Work: ANSI/ISEA 107-2004 Class 2 or 3 retro-reflective safety vests (yellow/lime) and Type E pants (Type 3 ensemble) and a hard-hat-mounted LED light (“miner’s lamp”).

Hearing protection shall be used, if the work site noise exceeds 90 decibels (dBA), as 8‑hour average exposure measurements. [29 CFR 1926.52 and .101]

**Walking and Working Surfaces**

Keep all accessible work areas and passageways free from debris, obstructions and other slip, trip and fall hazards.

**Excessive Driving Hours/Extended Work Shifts**

Distribute a one-page handout to each truck driver accessing the work zone to increase their awareness of hazards related to extended work shifts. The department will make the handout available electronically.

**Cranes and Hoists.**

Ensure that all crane operators have been certified by the National Commission for the Certification of Crane Operators (NCCCO) or by the Operating Engineer Certification Program (OECP) if they will be operating a 10-Ton or greater capacity crane or if they are involved in critical lifts.

Provide critical lift plans to the department at least 72 hours prior to a critical lift. The contractor is responsible for all submittals, assumptions, calculations, and conclusions. Have a professional engineer, registered in the state of Wisconsin and knowledgeable of the specific site conditions and requirements, verify the adequacy of the design. Submit one copy of each design, signed and sealed by the same professional engineer verifying the design, to the engineer.

Crane operators shall safely terminate hoisting operations in the event of wind conditions that exceed the original equipment manufacturer’s specifications for safe operation.

**Work near American Transmission Company (ATC) 69 kV, 138 kV, and 345 kV Overhead Electric Lines**

WisDOT is aware of possible induced voltage on metal objects from overhead 69 kV, 138 kV, and 345 kV electric lines. WisDOT staff are utilizing personal protective equipment (PPE) in the form of insulated gloves when inspecting or working on metal objects in the vicinity of these lines. Please use PPE in accordance with your company policies and OSHA requirements. Consult the current version of the ATC guidance document “Induced Voltage and Nuisance Shocks” (ATC, 2013) for best practices to prevent nuisance shocks when working around these overhead lines.

**Documentation and Records**

Maintain documents and records and ensure that they are readily available upon request. At a minimum this includes:

a. Written Safety Plan for Work Activities to be Performed

b. Names of Safety Representatives and copies of their OSHA 10-Hour Occupational Safety and Health Training Course in Construction Safety and Health training cards.

c. Names of Competent Persons and Qualified Persons (if required by OSHA for the work performed).

d. Reports of inspections of the job sites, materials, and equipment [29 CFR 1926.20(b)(2)].

e. Documentation that the SR has communicated and distributed materials from the Construction Safety Awareness Training to their site workers. At a minimum this will include a dated sign-in sheet with the names and signatures of the workers trained. The Department will provide a sign-in sheet template electronically.

f. Project site OSHA 300 Log (no worker names) [29 CFR 1904.29]

g. Project site OSHA 301 Incident Report (no worker names) [29 CFR 1904.29]

h. Hazard Communication Program [29 CFR 1926.59]

i. Hazardous Chemical Inventory,

ii. Location of Safety Data Sheets (SDSs)

iii. Hazard Warning Symbols

iv. Information and training requirements.

i. Exposure Monitoring results (if monitoring is required under a specific OSHA standard-no worker names)

j. Crane operator certifications (if applicable)

k. Fall Protection Plan (if applicable) [29 CFR 1926.500-.503 and 1926.104]

l. Confined Space Entry Procedures (if applicable). [29 CFR 1926.1200-.1213]

m. Lockout/Tagout Procedures (if applicable). [29 CFR 1926.417 and .702]

n. Respiratory Protection Program (if applicable) [29 CFR 1926.103 and 1910.134(c)]

o. Emergency Action Plan [29 CFR 1926.35]

i. Emergency escape procedures and emergency escape route assignments

ii. Procedures to be followed by employees who remain to operate critical equipment before they evacuate

iii. Procedures to account for all employees after emergency evacuation has been completed

iv. Rescue and medical duties for those employees who are to perform them;

* + - * First Aid and Medical Treatment Procedures [29 CFR 1926.50]
      * Equipment and Supplies
      * Names of persons certified in first aid
      * Location of the nearest medical facility.

v. The preferred means of reporting fires and other emergencies

vi. Prime contractor’s alarm system

vii. Names or regular job titles of persons who can be contacted for further information or explanation of duties under the plan.

p. Fire Protection Program (if applicable) [29 CFR 1926.150]

q. Fire Prevention Plan and Hot Work Permit procedures (if applicable) [29CFR 1926.352]

(2/21/2017)

1. Notice to Contractor – Earthwork Coordination.

Approximately 40,000 CY of Embankment will be placed within the project area between Stations 2549+00 and 2556+00 in the fall of 2019 by the contractor from Project 1007-12-74/75. This embankment in not shown on the project plans or cross sections, but has been accounted for as a line-item in the earthwork table under Embankment. Contact region construction engineer Mark Sponem at (608) 516-1792 for additional information and coordination.

1. Notice to Contractor – New or Revised Temporary Construction Access to IH 39.

Traffic control and staging plans/details contained within the project plans shall be followed by the contractor. The contractor’s use of any construction access point(s) to IH 39 which is/are not shown in the plans is prohibited without the prior written approval from FHWA and the department. To obtain written approval for temporary access to IH 39 during construction, the contractor shall provide the following:

Details on existing or new project plan sheets that show:

* The location, dimensions, grades, and slopes for any new/revised temporary construction access point(s) to IH 39.
* Traffic control measures that are required to manage this access change.
* Traffic control measures that are required to secure/close any new/revised construction access points when not in use.
* Erosion control measures required to manage this change, including the location(s) of any tracking pad(s).

Written summary of proposed temporary construction access change including:

* Timeframe to construct, duration in place, and time to remove.
* Cost of proposed temporary access including grading, traffic control, erosion control, and all other items and incidentals to implement and remove the access.
* Benefits in implementing the change (i.e., cost or time savings, ease of construction, increased safety to workers, and the motoring public).
* Signed Construction Permit if temporary access traverses private property.

The above information shall be provided to the engineer a minimum of 14 calendar days prior to the contractor’s anticipated implementation of the new/revised temporary construction access to IH 39. The request will be reviewed, and if warranted, concurred with designated IH 39 Corridor Management Team (CMT) Traffic and Project staff, the engineer, and WisDOT Central Office Field Construction Coordinator (if warranted). If these parties concur with the request, it will be forwarded to FHWA for review and processing a minimum of 7 calendar days in advance of the contractor’s anticipated implementation.

The engineer shall correspond with the following FHWA and department staff for concurrence:

* Dave Platz, FHWA, [Dave.Platz@dot.gov](mailto:Dave.Platz@dot.gov)
* Rich Cannon, IH 39 CMT Traffic, [Richard.Cannon@dot.wi.gov](mailto:Richard.Cannon@dot.wi.gov)
* Jeff Gustafson, IH 39 CMT Traffic, [Jeffrey.Gustafson@dot.wi.gov](mailto:Jeffrey.Gustafson@dot.wi.gov)

In the event of an emergency situation the above review process, including the extent of information required to be submitted and approval timeframes, can be modified if agreed upon by all parties.

(10/3/2016)

1. Notice to Contractor – Revisions to Traffic Control Plans.

The traffic control and staging plans/details contained within the project plans have been developed from an FHWA approved Transportation Management Plan (TMP). According to TMP requirements, the DEPARTMENT shall revise the TMP during construction if conditions warrant. This specification shall be followed to obtain concurrence for implementation of any proposed changes to construction phasing/staging that will affect the traffic patterns depicted in the plans.

Submit traffic control revision(s) to the engineer a minimum of 21 calendar days prior to the anticipated implementation of the proposed change(s). Include the following:

Detail on existing or new project plan sheets that show:

* The revised traffic pattern, widths, grades, temporary pavement, signs, traffic control devices, pavement marking, flaggers, time of day, width restrictions, and any other details required to convey a new or revised traffic control design.
* Erosion control measures required, including the location(s) of any tracking pad(s).

Written summary of proposed traffic control change including:

* Benefits to implementing the change (i.e., cost or time savings, ease of construction, increased safety to workers, and the motoring public).
* Timeframe to construct, duration in place, and time to remove.

The request will be reviewed, and if warranted, concurred with designated IH 39 Corridor Management Team (CMT) staff, the engineer, and WisDOT Central Office Field Construction Coordinator (if warranted). If the request is approved, it will be forwarded to FHWA for review and processing a minimum of 7 calendar days in advance of the contractor’s anticipated implementation.

The engineer shall correspond with the following FHWA and department staff to obtain concurrence:

* Dave Platz, FHWA, [Dave.Platz@dot.gov](mailto:Dave.Platz@dot.gov)
* Rich Cannon, IH 39 CMT Traffic, [Richard.Cannon@dot.wi.gov](mailto:Richard.Cannon@dot.wi.gov)
* Jeff Gustafson, IH 39 CMT Traffic, [Jeffrey.Gustafson@dot.wi.gov](mailto:Jeffrey.Gustafson@dot.wi.gov)

(10/3/2016)

1. Notice to Contractor – Airport Operating Restrictions.

**General Restrictions**

A temporary permit is not required from the Federal Aviation Administration (FAA) for the permanent or temporary installations that are included in the plans NOT LISTED BELOW UNDER ‘SITE SPECIFIC RESTRICTIONS’ as long as the contractor uses equipment that will not exceed 200 feet above ground level. The contractor shall submit FAA Form 7460-1, Notice of Proposed Construction or Alteration, to the FAA a minimum of 45 days before beginning construction operations that propose to use equipment that will exceed 200 feet above ground level.

If required, the FAA will return FAA Form 7460-2, Notice of Actual Construction or Alteration, with a determination. The contractor shall complete and send FAA Form 7460-2, Part 1 to the FAA at least 48 hours prior to starting the actual construction or alteration of a structure. Additionally, the contractor shall submit Part 2 no later than 5 days after the structure has reached its greatest height.

Contact Justin Hetland, Airspace Safety Program Manager, Bureau of Aeronautics at (608) 267-5018 ([Justin.Hetland@dot.wi.gov](mailto:Justin.Hetland@dot.wi.gov)) with any questions. Refer to the following FAA website for instructions to complete the form and the required information.

<http://oeaaa.faa.gov/oeaaa/externail/portal.jsp>.

**Site Specific Restrictions**

The Federal Aviation Administration (FAA) has height restrictions surrounding select airports. The department has obtained Temporary Determinations of No Hazard to Air Navigation for all temporary structure (i.e. crane) erections associated with bridge and retaining wall construction at the following locations. A copy of the determinations can be obtained through the engineer.

As a condition of the Determinations, the structures are to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 L Change 2, Obstruction Marking and Lighting, flags/red lights – Chapters 3 (Marked), 4, 5 (Red), & 12.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Structure** | **Location** | **Latitude** | **Longitude** | **Heights** | **Issue Date** | **Expiration Date** | **Aeronautical Study No.** |
| Crane (Temporary for R‑13‑334) | IH 39 Median, South of US 12 | 43-02-35.60 N NAD 83 | 89-16-38.30 W | 177 feet AGL 1067 feet AMSL | 7/29/2019 | 1/29/2021 | 2019-AGL-9985-OE |
| Crane (Temporary for B‑13‑729) | IH 39 NB over USH 12 EB | 43-02-45.20 N NAD 83 | 89-16-39.00 W | 177 feet AGL 1076 feet AMSL | 7/29/2019 | 1/29/2021 | 2019-AGL-9986-OE |
| Crane (Temporary for B‑13‑730) | IH 39 NB over USH 12 WB | 43-02-49.90 N NAD 83 | 89-16-39.20 W | 177 feet AGL 1078 feet AMSL | 7/29/2019 | 1/29/2021 | 2019-AGL-9987-OE |
| Crane (Temporary for B‑13‑731) | IH 39 NB over NB-EB Ramp | 43-02-56.10 N NAD 83 | 89-16-39.00 W | 177 feet AGL 1078 feet AMSL | 7/29/2019 | 1/29/2021 | 2019-AGL-9988-OE |
| Crane (Temporary for B‑13‑732) | IH 39 NB over Femrite Drive | 43-03-06.20 N NAD 83 | 89-16-37.40 W | 177 feet AGL 1071 feet AMSL | 7/29/2019 | 1/29/2021 | 2019-AGL-9989-OE |

For all other locations not listed under the lighting requirements above, marking/lighting are not necessary for aviation safety. However, if marking/lighting are accomplished on a voluntary basis, the contractor is encouraged to install and maintain it in accordance to FAA Advisory Circular 70/7460-1 K Change 2.

Lower any temporary structure (i.e. crane) to the ground when not in use and also during the hours between sunset and sunrise.

Notify the manager of Dane County Regional Airport at 608-246-3380 and the manager of Blackhawk Airfield at (608) 334-4932 at least 3 business days prior to any temporary structure being erected and again when the temporary structure is removed from the site.

Any failure or malfunction that lasts more than 30 minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867, so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

Any height of a temporary structure exceeding above ground level (AGL) or above mean sea level (AMSL), as listed in the temporary determination, will result in a substantial adverse effect and will warrant a Determination of Hazard to Air Navigation.

The determination expires unless extended, revised or terminated by the issuing FAA office. If an extension is needed, the contractor must request an extension of the effective period of the determination. The request must be e-filed at least 15 days prior to the expiration date.

For questions on extensions to the effective period of the determinations, contact the FAA office at (202) 267-4525, or [david.maddox@faa.gov](mailto:david.maddox@faa.gov) and reference the Aeronautical Study Number.

Any changes in coordinates and/or heights will void the determination. Any future construction or alteration, including increase to height, requires a separate notice to the FAA.

Determinations include temporary construction equipment such as cranes, derricks, and other equipment, which may be used during actual construction. Equipment shall not exceed the overall heights as indicated in the determination. The contractor must request separate notice to the FAA if equipment has a height greater than the determination.

The contractor must copy the engineer on any correspondence with the FAA.

A determination concerns the effect of temporary structures on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

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

James Gondek, License Number AII-108099, inspected Structure B-13-467 for asbestos on December 5, 2005. No regulated Asbestos Containing Material (RACM) was found on this structure. A copy of the inspection report is available from: Jennifer Grimes, [Jennifer.Grimes@dot.wi.gov](mailto:jennifer.grimes@dot.wi.gov), (608) 516-9760.

107-127 (20120615)

1. Contractor Data Packet.

The department will provide electronic design data for Project 1007-12-78. The data provided is for the bidder's general knowledge only and is not a part of the contract. The department assumes no responsibility for discrepancies between the data provided and the contract documents.

The department will provide the project contractor data packet before the project let date within 5 business days of a contractor request submitted by email to Mark Vesperman at [Mark.Vesperman@dot.wi.gov](mailto:mark.vesperman@dot.wi.gov).

The contractor data packet contains the following:

1. Field control data, LandXML v1.2 file

2. Existing topographic data, 2D AutoCAD DWG files

a. Mapping

b. Utilities

3. Reference line alignments and proposed profiles, LandXML v1.2 file(s)

4. Superelevation transition information, comma separated value (csv) text file(s)

5. Proposed roadway features, 2D AutoCAD DWG file

6. Proposed structure horizontal features, 2D in AutoCAD DWG file

7. Surface models, LandXML v1.2 files and AutoCAD DWG files containing 3D face objects representing surface TIN triangles of surface models as follows:

a. Existing ground surface

b. Proposed top surface

i. Top of topsoil outside the roadway subgrade shoulder points extended to the slope intercepts

ii. Top of shoulder and top of pavement within the roadway subgrade

c. Proposed datum surface

i. Top of topsoil outside the roadway subgrade shoulder points extended to the slope intercepts

ii. Subgrade surface within the roadway subgrade shoulder points

8. Proposed surface model longitudinal breaklines, 3D AutoCAD DWG files

9. Surface model outer boundaries, 3D AutoCAD DWG file

10. Slope stake report, comma separated value (csv) text file

11. Earthwork data, Excel spreadsheet xlsx file(s)

12. Right of Way and easement data, LandXML v1.2 file and 2D AutoCAD DWG file

13. Metadata information

(10/31/2017)

1. Clearing and Grubbing, Items 201.0105, 201.0120, 201.0205, and 201.0220.

*Supplement standard spec 201.3 with the following:*

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

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

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

(Note: blue ash twigs are 4-sided. All other Wisconsin ash trees have round stems.)

Mountain ash (Sorbus Americana and S. decora) is not a true ash and is not susceptible to EAB infestation.

The contractor shall be responsible for hiring a certified arborist to identify all ash trees that will be cleared and grubbed for the project. In addition, prior to scheduled clearing and grubbing activities, the arborist shall mark all ash trees with flagging tied around the trunk perimeter (florescent lime is suggested as it isn’t identified with other project activities).

Follow and obey the following DATCP order:

**ATCP 21.17 Emerald Ash Borer, Import Controls and Quarantine**

1. Importing or moving regulated items from infested areas; prohibition.

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

a) Import a regulated item under sub. (2) into this state if that item originates from an emerald ash borer regulated area identified in 7CFR 301.53-3.

b) Move any regulated item under sub. (2) out of an emerald ash borer regulated area that is identified in 7CFR 301.53-3 and located in this state.

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

2. Regulated items.

The following are regulated items for purposes of sub. (2):

a) The emerald ash borer, Agrilus planipennis Fairmaire in any living stage.

b) Ash trees.

c) Ash limbs, branches, and roots.

d) Ash logs, slabs or untreated lumber with bark attached.

e) Cut firewood of all non-coniferous species.

f) Ash chips and ash bark fragments (both composted and uncomposted) larger than 1 inch in diameter.

g) Any other item or substance that may be designated as a regulated item if a DATCP pest control official determines that it presents a risk of spreading emerald ash borer and notifies the person in possession of the item or substance that it is subject to the restrictions of the regulations.

**Regulatory Considerations**

The quarantine means that ash wood products may not be transported out of the quarantined area.

Clearing and grubbing includes all ash trees that are to be removed from within the project footprint. If ash trees are identified within clearing and grubbing limits of the project, the following measures are required for disposal:

Chipped ash trees

1) May be left on site if used as landscape mulch within the project limits. If used as mulch on site, chips may not be applied at a depth greater than standard mulch applications as this will impede germination of seeded areas.

2) May be buried on site within the right-of-way according to standard spec 201.3 (14).

3) May be buried on adjacent properties to projects within the quarantined zone with prior approval of the engineer according to standard spec 201.3 (15).

4) May be trucked to a licensed landfill within the quarantined zone with the engineer’s approval according to standard spec 201.3 (15).

(8/18/2014)

1. 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.

204-050 (20080902)

1. Removing Apron Endwall, Item 204.9060.S.

A Description

This special provision describes removing apron endwall conforming to standard spec 204.

B (Vacant)

C (Vacant)

D Measurement

The department will measure Removing Apron Endwall by each acceptably completed.

E Payment

*Add the following to standard spec 204.5:*

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| 204.9060.S | Removing Apron Endwall | EACH |

204-025 (20150630)

1. Embankment Construction.

*Replace standard spec 205.3.2(4) with the following:*

If placing embankment on side slopes 10 feet high or higher and steeper than 1 vertical to 3 horizontal, cut a minimum 2-foot horizontal bench into the existing embankment every 2 feet of vertical fill height.

1. Roadway Excavation.

*Supplement standard spec 205.5.2(1) to include the following*:

Provide the department with an earth flow diagram within 30 calendar days of receiving the contract Notice to Proceed.

Identify on the earth flow diagram, all excavation material within the project; material shrinkage and swell factors; acceptable on-site material available for use as embankment within the project; anticipated off-site material that will be required for use as embankment within the project (if applicable); and anticipated material to be disposed of off-site (if applicable). It is the sole responsibility of the contractor to prepare their individual investigation and testing program to establish material shrinkage and swell factors.

(6/29/2015)

1. Borrow.

*Replace standard spec 208.1(1) with the following*:

This section describes constructing embankments and other portions of the work consistent with the earthwork summary and defines the contract requirements for embankment material if required by the plans or if the contractor elects to utilize off-site material to complete the roadway embankments.

*Delete standard spec 208.2.2(2).*

*Supplement standard spec 208.3 to include the following*:

The contractor shall be responsible for complying with all permit requirements in obtaining embankment materials.

*Supplement standard spec 208.4 with the following*:

The department will not measure embankment material from its source.

*Supplement standard spec 208.5 with the following*:

The department will not pay directly for work specified under this section pertaining to Borrow. This work is included in the Roadway Embankment bid item.

(5/31/2016)

1. Select Borrow, Item 208.1100.

Conform to the requirements of standard spec 208 and as hereinafter provided.

**Materials**

Furnish and use material that consists of granular material meeting the following requirements: Maximum particle size of 12 inches when measured from any face. The material passing the No. 4 sieve shall have a maximum of 15% by weight passing the No. 200 sieve.

As a contractor’s option, the department will allow the use of select crushed material for select borrow. The material shall conform to the requirements of standard spec 312, and will be measured and paid for as Select Borrow.

**Measurement**

*Replace standard spec 208.4 with the following:*

The department will measure select borrow by the cubic yard acceptably completed in its final location using the method of average end areas, with no correction for curvature or settlement, except as follows:

1. The engineer and contractor mutually agree to an alternative volume calculation method;

2. The method of average end areas is not feasible.

If it is not possible to compute volumes of select borrow by the method of average end areas due to erratic location of isolated deposits, the department may compute the volumes by alternative methods involving 3-dimensional measurements.

The department will not measure select borrow material beyond the limits of the required slopes as shown on the plans.

(11/29/2016)

1. Base Aggregate Dense 3/4-Inch, Item 305.0110.

*Add the following to standard spec 301.2.4.3:*

Furnish only aggregate classified as crushed stone for Base Aggregate Dense 3/4-Inch when used in the top 3 inches of the unpaved portion of the shoulder or for unpaved driveways and field entrances.

swr-305-001 (20170711)

1. Base Aggregate Dense 1 1/4-Inch, Item 305.0120.

*Add the following to standard spec 305.2.2.1:*

When 1 1/4-Inch base aggregate is >/= 50 percent crushed gravel, conform to the following gradation requirements:

|  |  |
| --- | --- |
| SIEVE | PERCENT PASSING BY WEIGHT |
| 1 1/4 inch | 95 - 100 |
| 1 inch | --- |
| 3/4 inch | 70 - 90 |
| 3/8 inch | 45 - 75 |
| No. 4 | 30 - 60 |
| No. 10 | 20 - 40 |
| No. 40 | 7 - 25 |
| No. 200 | 3 - 10 *[1]* |

*[1]* Limited to a maximum of 8.0 percent for base placed between old and new pavement.

swr-305-002 (20170711)

1. 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, use non-corrosive high performance dowel bars. Use only one type of high performance bar for work under the contract. The contractor may use any one of the following:

1. Bars with 316L stainless steel cladding meeting ASTM A276 chemical requirements. Ensure that the bars have a smooth finished surface cladding 0.060 inches thick or thicker over ASTM A615 grade 60 or higher carbon steel.

2. Bars with 316L stainless steel tubes meeting ASTM A276 chemical requirements. Ensure that the tubes have a smooth finished surface, a wall thickness of 0.060 inches or more, and are press-filled with ASTM A615 grade 60 or higher carbon steel. Use an adhesive or epoxy between the tube and the carbon steel to fill any voids.

3. Solid 316L stainless steel bars conforming to ASTM A955 grade 60 or higher.

4. Bars with a rolled UNS Z41121 zinc alloy cladding conforming to ASTM B6. Ensure that the bars have a smooth finished surface cladding 0.040 inches thick or thicker over ASTM A615 grade 60 or higher carbon steel.

5. Bars with a fully bonded longitudinal glass fiber reinforced polymer (GFRP) corrosion shield conforming to the GFRP materials requirements of AASHTO LRFD Bridge Design Guide Specifications for GFRP Reinforced Concrete Bridge Decks and Traffic Railings. Ensure that the bars have a smooth finished GFRP surface coating 0.125 inches thick or thicker over ASTM A615 grade 60 or higher carbon steel.

416-020 (20130615)

1. Special High Early Strength Concrete Pavement Repair and Replacement

*Replace standard spec 416.2.3.2, paragraph (3), sentence 1 with the following:*

(3) Achieve a minimum compressive yield strength of 3000 psi for special high early strength concrete prior to opening to traffic by the times described in the “Traffic” article under Permitted Lane Closure Times.

*Replace standard spec 416.3.8.2, paragraph (1), sentence 1 with the following:*

(1) Place, cure and open special high early strength concrete to traffic by the times described in the “Traffic” article under Permitted Lane Closure Times.

*Replace standard spec 416.3.8.3, paragraph (1), sentence 1 with the following:*

(1) Place, cure and open special high early strength concrete to traffic by the times described in the “Traffic” article under Permitted Lane Closure Times.

1. Concrete Protective Surface Treatment.

*Modify standard spec 415 as follows:*

**415.3.6 Placing Concrete**

*Add the following as standard spec 415.3.6.4:*

**415.3.6.4 Concrete Protective Surface Treatment**

1. This specification applies to all sawed concrete joints on the IH 39 interstate mainline and ramps, also including sawed joints on concrete shoulders, and to all concrete placement methods. Treat sawed surfaces of transverse and longitudinal joints with a silane joint sealant found on the department approved products list for Concrete Protective Surface Treatments. Prepare surface by pressure washing all saw slurry from sawed joints and allow to dry thoroughly prior to application of silane sealer. Apply the product directly to the interior of the sawed joint. Do not use the broadcast spray method of application.

(1/5/2017)

1. HMA Pavement Modification.

**A Description**

This special provision describes specialized material requirements for HMA Pavements. Conform to standard spec 460 as modified in this special provision.

*Replace the noted HMA mixture values in Table 460-2 under 460.2.7 with the following:*

1. LA Wear (AASHTO T96) – LT, MT, HT, and SMA mixtures:

* 100 revolutions – 13% loss maximum
* 500 revolutions – 40% loss maximum

2. Soundness (AASHTO T104) (sodium sulfate) – LT, MT, HT, and SMA mixtures:

* 9.0% loss maximum

3. Freeze/ Thaw (AASHTO T103) (specified counties) – LT, MT, HT, and SMA mixtures:

* 12% loss maximum

*Replace Note 3 at the end of Table 460-2 under standard spec 460.2.7 with the following:*

*[3]* For No. 5 (9.5 mm) and No. 4 (12.5 mm) nominal maximum size mixtures, the specified VFB range is 73 – 76%.

(07/13/2016)

1. QMP HMA Pavement Nuclear Density.

A Description

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

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

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

1. Selection of test sites.

2. Testing.

3. Necessary adjustments in the process.

4. Process control inspection.

(3) Chapter 8 of the department’s construction and materials manual (CMM) provides additional detailed guidance for QMP work and describes required procedures.

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

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

<http://www.atwoodsystems.com/>

B Materials

B.1 Personnel

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

B.2 Testing

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

B.3 Equipment

B.3.1 General

(1) Furnish nuclear gauges according to CMM 8-15.2.

(2) Furnish nuclear gauges from the department’s approved product list at:

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

B.5 Department Testing

B.5.1 Verification Testing

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

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

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

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

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

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

B.5.2 Independent Assurance Testing

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

B.6 Dispute Resolution

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

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

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

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

B.7 Acceptance

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

C (Vacant)

D (Vacant)

E Payment

E.1 QMP Testing

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

E.2 Disincentive for HMA Pavement Density

(1) The department will administer density disincentives 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.

460-020 (20181119)

1. Aggregates for Concrete Pavements.

This special provision describes specialized material requirements for aggregates used in Concrete Pavements. Conform to standard spec 415 and 501, as modified in this special provision. Conform to standard spec 715 for QMP Concrete Pavement and Structures.

*Replace standard spec 501.2.5.4.1 with the following:*

**501.2.5.4.1 General**

(1) The department will sample and test aggregates as follows:

LA Wear (100 and 500 revolutions) AASHTO T 96

Sodium Sulfate Soundness (R-4, 5 cycles) AASHTO T 104

Freeze-Thaw Soundness AASHTO T 103

Lightweight Pieces *[1]* AASHTO T 113

*[1]* Material having a bulk specific gravity (saturated surface-dry basis) of less than 2.45. Determine the percentage of lightweight pieces by dividing the weight of lightweight pieces in the sample retained on the 3/8-inch sieve by the weight of the total sample.

(2) Contact the engineer a minimum of 4 weeks prior to paving to collect a sample of the aggregates proposed for the project. The engineer will obtain the sample, or observe the contractor obtaining the sample. The sampler must be HTCP certified to sample aggregates.

(3) The department will randomly sample coarse aggregate for lightweight pieces testing at least once per 10,000 cubic yards during placement of concrete pavement.

(4) Use clean, hard, durable crushed gravel or crushed limestone free of an excess of thin or elongated pieces, frozen lumps, vegetation, deleterious substances, or adherent coatings considered injurious.

(5) Use virgin aggregates only.

*Replace the first paragraph of standard spec 501.2.5.4.2 with the following:*

(1) The amount of deleterious substances must not exceed the following percentages:

DELETERIOUS SUBSTANCE PERCENT BY WEIGHT

Shale 1.0

Coal 1.0

Clay lumps 0.3

Soft fragments 5.0

Any combination of above 5.0

Thin or elongated pieces based on a 3:1 ratio 15.0

Materials passing the No. 200 sieve 1.5

Lightweight Pieces 5.0

*Replace the first paragraph of standard spec 501.2.5.4.3 with the following:*

(1) The percent wear shall not exceed 40, the weighted soundness loss shall not exceed 9 percent, and the weighted freeze-thaw average loss shall not exceed 12 percent.

(10/26/2016)

1. 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

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

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 |

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.

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.

If required to remove and replace any concrete damaged by lack of proper protection. Perform this work at no expense to the department.

501-010 (20151210)

1. 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.

505-005 (20190618)

1. Polymer Overlay, Item 509.5100.S.

A Description

This special provision describes providing 2 layers of a 2-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 2-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 hours  5,000 psi @ 24 hours | ASTM C579 Method B,  Modified*[2]* |
| Thermal Compatibility | No Delaminations | ASTM C884 |
| Minimum Pull-off Strength | 250 psi @ 24 hours | 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 repair the concrete deck will be paid for under other items. Ensure that products used for deck patching are compatible with the polymer overlay system.

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

C.2.2 Surface Preparation

Determine an acceptable shotblasting machine operation (size of shot, flow of shot, forward speed, and/or number of passes) that provides a surface profile meeting CSP 5 (medium-heavy shotblast) according to the 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 50F or above 100F.

2. Deck temperature is below 50F.

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 65F or above 99F.

6. Concrete age is less than 28 days unless approved by the engineer.

7. The deck temperature exceeds 100F.

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 2-course application of polymer and aggregate. Each of the 2 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 2 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 1,000 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 Concrete Deck Repair.

509-030 (20170615)

1. Concrete Staining B-13-0729, Item 517.1010.S.700; B-13-0730, Item 517.1010.S.701; B-13-0731, Item 517.1010.S.702; B-13-0732, Item 517.1010.S.703; R-13-348, Item 517.1010.S.704; R-13-349, Item 517.1010.S.705; R-13-350, Item 517.1010.S.706; R-13-351, Item 517.1010.S.707; R-13-352, Item 517.1010.S.708; R-13-334, Item 517.1010.S.709

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 (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.700 | Concrete Staining B-13-0729 | SF |
| 517.1010.S.701 | Concrete Staining B-13-0730 | SF |
| 517.1010.S.702 | Concrete Staining B-13-0731 | SF |
| 517.1010.S.703 | Concrete Staining B-13-0732 | SF |
| 517.1010.S.704 | Concrete Staining R-13-348 | SF |
| 517.1010.S.705 | Concrete Staining R-13-349 | SF |
| 517.1010.S.706 | Concrete Staining R-13-350 | SF |
| 517.1010.S.707 | Concrete Staining R-13-351 | SF |
| 517.1010.S.708 | Concrete Staining R-13-352 | SF |
| 517.1010.S.709 | Concrete Staining R-13-334 | SF |

Payment is full compensation for furnishing and applying the two coat system; for preparing the concrete surface; and for preparing the sample panels.

517-110 (20140630)

1. MGS Guardrail.

*Add the following to standard spec 614.3.2.1:*

Construct, with sawcuts or coring through existing HMA pavement, and per plan details, areas to receive the guardrail posts.

*Add the following to standard spec 614.5 paragraph (4):*

Payment is also for providing cored or sawed holes, and for controlled low-strength backfill including mix design and testing, as shown in the plan details in areas where MGS guardrail posts are to be set in previously paved asphalt pavements.

1. 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 3 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 2 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.

616-030 (20160607)

1. Maintenance and Repair of Haul Roads

*Revise standard spec 618.3.1 as follows:*

The contractor shall provide the engineer a detailed map of all proposed haul roads including the type of trucking operation and expected durations at least 10 days prior to the commencement hauling operations. The contractor will update hauling information mapping as needed. The engineer will contact the local maintaining authority to discuss the condition of the road and will video tape the haul road condition prior to hauling. Digital copies of this video will be made available to the maintaining authorities. Contractor will video tape the haul road after hauling operations conclude, and digital copies of this video will be made available to the maintaining authorities, to assess the condition of the roadway.

1. Field Facilities.

*Replace standard spec 642.2.1 (4) with the following:*

Provide and maintain suitable interior sanitary facilities conforming to State and local health requirements, in clean and good working condition, provide a weekly cleaning service, and stock with sanitary supplies for the duration of the contract.

*Supplement standard spec 642.2.2.1 (3) with the following:*

Provide CAT 5 services with a minimum of six CAT 5 receptacles.

*Supplement standard spec 642.2.2.1 (4) with the following:*

Provide and maintain a plain-paper photocopier with scanner that uses toner not ink, has auto-feed capability, and can output a PDF of a copied or scanned document.

*Add standard spec 642.2.2.1 (5) as follows:*

Provide a field office having an adjacent hard surface parking facility with a minimum capacity of 16 passenger vehicles.

*Replace standard spec 642.2.2.4 with the following:*

Under bid item Field Office Type D, furnish a facility with a minimum interior space of 1,500 square feet including a meeting room that is at least 20 feet by 20 feet; furnish indoor sanitary facilities that are housed within, or directly adjacent to, the field office; clean, maintain, and supply the field office and sanitary facilities weekly; and equip with the following:

* Ten suitable office desks with drawers and locks.
* Ten ergonomically correct office chairs in working condition in accordance with standard spec 642.2.2.1 (4).
* Two 4-drawer file cabinets.
* Two 4-shelf bookcases.
* Four 2.5 x 5-foot (minimum) tables.
* Four 4 x 8-foot (minimum) tables for the meeting room.
* Twenty, or more, folding chairs.

*Add standard spec 642.3 (7) as follows:*

(7) Locate the field office to be within 3 miles of the IH 39 interchange with USH 12.

*Add standard spec 642.5 (4) as follows:*

(4) Payment of the field office is full compensation for providing a weekly cleaning service for the field office and sanitary facilities, for providing sanitary supplies as necessary, for replenishing paper, toner cartridges, and other supplies before fully expended, for maintaining the photocopier/scanner in working order at all times and for providing and supporting CAT 5 services.

1. Traffic Control Signs.

**A Description**

This special provision describes mounting height requirements. Conform to standard spec 643, as modified in this special provision.

*Supplement standard spec 643.2.9.1(5) as follows:*

Provide associated advanced signing, including portable traffic control signing, according to the MUTCD. Mount all portable traffic control sign at a minimum height of 5 feet, measured from the bottom of the sign, above the edge of pavement.

(7/6/2014)

1. 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.

643-010 (20100709)

1. Truck or Trailer-Mounted Attenuator, Item 643.1055.S.

A Description

This special provision describes protecting work operations with a truck or trailer-mounted attenuator (TMA).

B Materials

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.

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

Coordinate with the engineer at least 72 hours before its intended use so the engineer can determine if the work operation requires TMA protection.

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

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

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 |

Payment is full compensation for providing the portable attenuator, host vehicle, and operator.

643-015 (20140630)

1. 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

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]* | ≤2.3 |

*[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 | ≤ 2.3 |

*[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 |

715-005 (20181119)

1. 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 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 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.

715-010 (20170615)

1. Roadway Embankment, Item SPV.0035.001

*Conform to standard spec 207 unless modified by this special provision.*

**A Description**

*Replace standard spec 207.1(1) with the following*:

This section describes providing and placing, in embankments and in miscellaneous backfills, material obtained under the bid items in the roadway and drainage excavation or excavation for structure sections; or material obtained under Borrow as specified in standard spec 208 and modified under these special provisions.

**B Materials**

*Conform to standard spec 207.2.*

**C Construction**

*Conform to standard spec 207.3 and as follows:*

Prior to placement of fill material, proof-roll the existing native cohesive soil using a heavily loaded triaxle truck or similar construction equipment**.**

**D Measurement**

*Replace standard spec 207.4(1) with the following*:

The department will measure Roadway Embankment by the cubic yard, acceptably completed in its final location using the method of average end areas, with no correction for curvature or settlement, except as follows:

1. The engineer and contractor mutually agree to an alternative volume calculation method;

2. The method of average end areas is not feasible.

If it is not possible to compute volumes of the various classes of roadway and drainage embankment by the method of average end areas due to erratic location of isolated deposits, the department may compute the volumes by alternative methods involving 3-dimensional measurements.

The department will not measure embankment material beyond the limits of the required slopes as shown on the plans.

**E Payment**

*Replace standard spec 207.5(1) with the following*:

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0035.001 | Roadway Embankment | CY |

Payment is full compensation for providing material from roadway excavation or borrow material; and for forming, compacting, shaping, sloping, trimming, finishing, and maintaining the embankments.

The department will pay for all work associated with select borrow material separately as specified under the Select Borrow bid item.

The department will pay for erosion control, fertilizing, and seeding of borrow sites and associated areas separately as specified for borrow sites and material disposal sites in standard spec 628.5.1.

ASP-5 will be applied to this item. The Fuel Usage Factor for this item is 0.23.

1. High Performance Concrete (HPC) Masonry Structures, Item SPV.0035.700.

This special provision describes specialized material and construction requirements for high-performance concrete used in bridge structures. Conform to standard specs 501, 502, and 509, as modified in this special provision. Conform to standard spec 715 for QMP Concrete Pavement and Structures.

***MODIFY STANDARD SPECIFICATIONS AS FOLLOWS:***

**501.2.5.4.1 General**

(1) The department will sample and test aggregates as follows:

LA Wear (100 and 500 revolutions) AASHTO T96

Sodium Sulfate Soundness (R-4, 5 cycles) AASHTO T104

Freeze-Thaw Soundness AASHTO T103

Lightweight Pieces *[1]* AASHTO T113

*[1]* Material having a bulk specific gravity (saturated surface-dry basis) of less than 2.45. Determine the percentage of lightweight pieces by dividing the weight of lightweight pieces in the sample retained on the 3/8-inch sieve by the weight of the total sample.

(2) Contact the engineer a minimum of 4 weeks prior to placing concrete to collect a sample of aggregates proposed for the project. The engineer will obtain the sample, or observe the contractor obtaining the sample. The sampler must be HTCP certified to sample aggregates.

(3) The department will randomly sample coarse aggregate for lightweight pieces testing at least once at least once per 10,000 cubic yards during HPC structure concrete production.

(4) Use clean, hard, durable crushed limestone free of an excess of thin or elongated pieces, frozen lumps, vegetation, deleterious substances, or adherent coatings considered injurious.

(5) Use virgin aggregates only.

**501.2.5.4.2 Deleterious Substances**

*Replace paragraph one with the following:*

The amount of deleterious substances must not exceed the following percentages:

DELETERIOUS SUBSTANCE PERCENT BY WEIGHT

Shale 1.0

Coal 1.0

Clay lumps 0.3

Soft fragments 5.0

Any combination of above 5.0

Thin or elongated pieces based on a 3:1 ratio 15.0

Materials passing the No. 200 sieve 1.5

Lightweight Pieces 2.0

**501.2.5.4.3 Physical Properties**

*Replace paragraph one with the following:*

The percent wear must not exceed 35, the weighted soundness loss must not exceed 6 percent, and the weighted freeze-thaw average loss must not exceed 12 percent.

**501.3.2.4.3.3 Extended Delivery Time**

*Delete paragraph one.*

**501.3.5.1 General**

*Replace paragraph one with the following:*

Use central-mixed concrete as defined in standard spec 501.3.5.1(2) for all work under this special provision.

**501.3.5.2 Delivery**

*Replace paragraph three with the following:*

Deliver and completely discharge concrete within 1 hour beginning when adding water to the cement, or when adding cement to the aggregates. A decrease in air temperature below 60° F or the use of department-approved retarders does not increase the discharge time.

**501.3.7.1 Slump**

*Replace the entire text with the following:*

Use a 2-inch to 4-inch slump.

Perform the slump tests for concrete according to AASHTO T119.

**501.3.8.2.1 General**

*Replace the entire text with the following:*

The contractor is responsible for the quality of the concrete placed in hot weather. Submit a written temperature control plan at or before the pre-pour meeting. In that plan, outline the actions the contractor will take to control concrete temperature if the concrete temperature at the point of placement exceeds 80° F. Do not place concrete without the engineer's written acceptance of that temperature control plan. Perform the work as outlined in the temperature control plan.

If the concrete temperature at the point of placement exceeds 80° F, do not place concrete for items covered in this special provision.

Notify the engineer whenever conditions exist that might cause the temperature at the point of placement to exceed 80° F. If project information is not available, the contractor should obtain information from similar mixes placed for other nearby work.

The department will pay $0.75 per pound for the quantity of ice required to reach a target temperature of 75° F if the following conditions are met:

The un-iced concrete temperature exceeds 80° F.

The contractor has performed the actions outlined in the contractor’s accepted temperature control plan.

The contractor elects to use ice.

**501.3.8.2.2 Bridge Decks and Structural Approach Slabs**

*Replace the entire text with the following:*

(1) Do not place concrete for bridge decks or structural approach slabs when the ambient air temperature is above 80° F.

(2) For concrete placed in bridge decks and structural approach slabs, submit a written evaporation control plan at each pre-pour meeting. In that plan, outline the actions the contractor will take to maintain concrete surface evaporation at or below 0.15 pounds per square foot per hour. Do not place concrete for bridge decks or structural approach slabs without the engineer’s written acceptance of that evaporation control plan. Perform the work as outlined in the evaporation control plan.

(3) If predicting a concrete surface moisture evaporation rate exceeding 0.15 pounds per square foot per hour, do not place concrete for bridge decks or structural approach slabs.

(4) Provide evaporation rate predictions to the engineer 24 hours prior to each bridge deck or structural approach slab pour.

(5) Compute the evaporation rate from the predicted ambient conditions at the time and place of the pour using the nomograph, or computerized equivalent, specified in CMM 5.25, figure 1. Use weather information from the nearest national weather service station. The engineer will use this information to determine if the pour will proceed as scheduled.

(6) At least 8 hours before each pour, the engineer will inform the contractor in writing whether or not to proceed with the pour as scheduled. If the actual computed evaporation rate during the pour exceeds 0.15 pounds per square foot per hour, at the sole discretion of the engineer, the contractor may be allowed to implement immediate corrective action and complete the pour.

**502.3.5.4 Superstructures**

*Delete paragraph five.*

**502.3.7.8 Floors**

*Delete paragraphs 13.*

*Replace paragraphs 14 and 15 with the following:*

(14) If staging requires public traffic on bridge deck prior to polymer overlay application, transversely tine finish the floors of structures with approach pavements designed for speeds of 40 mph or greater as specified in 415.3.8.3, except make the tining 1/8 inch in depth and do not perform tining within 12 inches of gutters. The contractor may apply a broom finish, described below, instead of the artificial turf drag finish required before tining. The contractor may perform tining manually, if it obtains a finish satisfactory to the engineer. Perform tining within 20 degrees of the centerline of bearing of the substructure units on bridge decks having skew angles of 20 degrees or greater.

(15) If providing a broom finish, draw the broom transversely across the full width of the pavement with adjacent strokes slightly overlapping. Perform brooming to produce uniform corrugations and approximately 1/8 inch in depth. Complete brooming before concrete hardens and this operation tears or roughens the surface. Brooming shall provide a surface free from rough or porous areas, irregularities, and depressions that result from improper broom handling. Furnish brooms of a sufficient quality, size and construction, and operate them to produce a surface finish the engineer approves. Provided the contractor obtains satisfactory results, the engineer will allow manual brooming instead of mechanical brooming.

*Add the following to the end as paragraphs 19, 20 and 21:*

(19) Do not place bridge deck concrete more than 10 feet ahead of the finishing machine. If there is a delay of more than 10 minutes during the placement of a bridge deck, cover all concrete (unfinished and finished) with wet burlap to protect the concrete from evaporation until placement operations resume.

(20) Hand finishing, except for the edge of deck, must be kept to a minimum. The finishing machine must be equipped with a pan behind the screed. Apply micro texture using a broom or turf drag following the use of a 10‑foot straight edge. Only finish by hand as necessary to close up finished concrete. Begin wet curing the deck immediately following the micro texture.

(21) For bridge decks with a design speed of 40 mph or greater that will not receive a polymer overlay under this contract, provide longitudinal grooving according to the provision included in this contract. For bridges receiving a polymer overlay under this contract, provide longitudinal grooving on structural approach slabs according to the provision in this contract.

**502.3.8.1 General**

*Replace paragraph one with the following:*

Maintain adequate moisture throughout the concrete mass to support hydration for at least 14 days.

**502.3.8.2.1 General**

*Replace the entire text with the following:*

Wet cure the concrete for bridge decks, sidewalks and raised medians for 14 days by use of a soaker hose system, or other engineer-approved methods. Cover the finished surface of bridge decks and overlays with one layer of wetted burlap or wetted cotton mats within 10 minutes after the finishing machine has passed. Apply the burlap/cotton gently so as to minimize marking of the fresh concrete. Keep the first layer of burlap/cotton continuously wet until the bridge deck or overlay is sufficiently hard to apply a second layer of wetted burlap/cotton. Immediately after applying the second layer of burlap/cotton, continue to keep the deck wet until placing and activating the soaker hose system. Throughout the remainder of the curing period, keep the burlap/cotton continuously wet with soaker hoses hooked up to a continuous water source. Inspect the burlap/cotton twice daily to ensure the entire surface is moist. If necessary, alter the soaker hose system as needed to ensure the entire surface is completely covered and stays moist. After 48 hours from the time of completion of the bridge deck or overlay pour, the soaker hose system and burlap/cotton may be covered with polyethylene sheeting. Provide a continuous flow of water through the soaker hose system for the entire curing period.

Do not uncover any portion of the deck at any time for any reason during the first 7 days of the curing period.

Set up and test the fogging system before each bridge deck, raised median and sidewalk pour. The fogging system must remain set up and in operating condition for the duration of the pour.

**502.3.8.2.3 Decks**

*Delete the entire text.*

**502.3.8.2.4 Parapets**

*Replace the entire text with the following:*

Cure the inside and outside concrete faces and tops of railings or parapets by covering with wetted burlap immediately after form removal and surface finish application. Keep the burlap thoroughly wet for at least 7 days; or by covering for the same period with thoroughly wet polyethylene-coated burlap conforming to standard spec 501.2.9.

Secure coverings along all edges to prevent moisture loss.

**502.3.9.6 Bridge Decks**

*Replace paragraph two with the following:*

Protect the underside of the deck, including the girders, for bridge deck and overlay pours by housing and heating when the national weather service forecast predicts temperatures to fall below 32° F during the cold weather protection period. Maintain a minimum temperature of 40° F in the enclosed area under the deck for the entire 14-day curing period.

**502.5.1 General**

*Replace paragraph one with the following:*

The department will pay for plan quantities according to standard spec 109.1.1.2 at the contract unit price and incidentals necessary to complete the work under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0035.700 | High Performance Concrete (HPC) Masonry Structures | CY |

**710.5 Sampling and Testing**

*Add the following:*

**710.5.7 Chloride Penetration Resistance**

(1) For each new or changed mix design, measure chloride penetration resistance according to AASHTO T 277 (Rapid Chloride Permeability Test) at a frequency of 1 test per 3 months (quarterly) of production.

(2) Permeability samples for AASHTO T 277 testing must be stripped of their molds and wet cured to an age of 7 days in a standard moist room or water tank. After 7 days, submerge the samples in water heated to 100° F until an age of 28 days. Upon completion of the curing process, obtain one sample from each cylinder and test according to AASHTO T 277.

(3) Ensure that the initial accepted mix designs meet the chloride penetration resistance limit of 1,500 coulombs based on the AASHTO T 277 Rapid Chloride Permeability test. Chloride resistance testing conducted quarterly using AASHTO T 277 Rapid Chloride. Permeability Test during production will not be used for acceptance of previously accepted mixes and concrete masonry mixed and placed according to the contract requirements. For quarterly chloride resistance test results exceeding 1,500 coulombs, the department may require adjustment of the concrete mix going forward to improve the chloride penetration resistance.

**715.2.3.2 Structures**

*Replace paragraph one with the following:*

(1A) Develop and test each mix to be used for HPC Masonry Structures. Produce a laboratory trial mix for each mix, as well as a trial mix from each plant used to supply the project. Test all mixes at a department-qualified laboratory.

(1B) The laboratory trial mix data must include the results of the following tests:

1. AASHTO T119 Slump of Hydraulic Cement Concrete.

2. AASHTO T121 Mass per Cubic Foot, Yield.

3. AASHTO T152 Air Content.

4. AASHTO T22 Compressive Strength.

5. AASHTO T277 Rapid Determination of the Chloride Permeability of Concrete, using the modified curing procedure according to standard spec 710.5.7. (2) herein.

6. AASHTO T309 Temperature.

7. Water Cement Ratio.

(1C) The 28-day compressive strength must be greater than or equal to 4000 psi. The 28‑day results of the permeability test must be less than or equal to 1500 coulombs.

*Replace paragraph two with the following:*

(2) Provide a minimum cementitious content of 470 pounds per cubic yard and a maximum cementitious content of 540 pounds per cubic yard. For all superstructure and substructure concrete, unless the engineer approves otherwise in writing, conform to one of the following:

1. Use class C fly ash or grade 100 or 120 slag as a partial replacement for Portland cement. For binary mixes use 15% to 30% fly ash or 20% to 30% slag. For ternary mixes use 15% to 30% fly ash plus slag in combination. Percentages are stated as percent by weight of the total cementitious material in the mix.

Use a type IP or IS blended cement.

(10/26/2016)

1. Baseline CPM Progress Schedule, Item SPV.0060.001; CPM Progress Schedule Updates and Accepted Revisions, Item SPV.0060.002.

*Replace standard spec 108.4 with the following:*

**108.4 Critical Path Method Progress Schedule**

**108.4.1 Software**

Use the latest version of Oracle (Primavera) Project Manager (P6) version 7.0 or newer to prepare the Initial Work Plan Schedule, Baseline CPM Progress Schedule, and all Monthly CPM Updates.

**108.4.2 Personnel**

Designate a Project Scheduler who will be responsible for scheduling the Work and submit for department approval a professional resume describing a minimum of 3 years of developing and managing specific CPM scheduling experience on major (interstate) highway reconstruction projects or projects of similar size and complexity. This includes recent experience using Oracle P6 software.

**108.4.3 Definitions**

The department defines terms used in standard spec 108.4 as follows:

**Activity**

A task, event or other project element on the schedule, during the course of the project that contributes to completing the project. Activities have a description, scheduled (or actual) start and finish dates, duration and one or more logic ties.

**Critical Path**

The longest continuous path of activities through the project that has the least amount of total float. In general, a delay on the critical path will extend the scheduled completion date.

**Critical Path Method (CPM)**

A network based planning technique using activity durations and the relationships between activities to mathematically calculate a schedule for the entire project.

**Construction Activity**

Construction activities are discrete work activities performed by the contractor, subcontractors, utilities, or third parties within the project limits.

**CPM Progress Schedule**

A Critical Path Method (CPM) Progress Schedule is a network of logically related activities. The CPM schedule calculates when activities can be performed and establishes the critical or longest continuous path or paths of activities through the project.

**Data Date**

The earliest work period after the date through which a schedule is current. Everything occurring earlier than the data date is "as-built" and everything on or after the data date is "as-planned."

**Department’s Preliminary Construction Schedule (PCS)**

The department’s schedule for the contract work, developed during design, and provided to the contractor for informational purposes only.

**Float**

Float, as used herein, is the total float of an activity; i.e., it is the amount of time between the date when an activity can start (the early start), and the date when an activity must start (the late start). In cases where the total float of an activity has a different value when calculated based on the finish dates, the lower (more critical) value will govern.

**Forecast Completion Date**

The completion date(s) predicted by the latest accepted CPM Update, which may be earlier or later than the contract completion date(s), depending on progress.

**Fragnet**

A group of logically-related activities, typically inserted into an existing CPM schedule to model a portion of the project, such as the work associated with a change order or delay impact.

**Initial Work Plan Schedule**

The Initial Work Plan (IWP) Schedule is a time-scaled CPM schedule showing detailed activities for the first 90 calendar days of work and summary level activities for the remainder of the project.

**Intermediate Milestone Date**

A contractually required date for the completion of a portion of the work, so that a subsequent portion of the work or stage of traffic phasing may proceed.

**Master Program Schedule**

The department’s schedule for the overall IH 39 Corridor Management Program, including intermediate milestone dates contract completion dates and codes.

**Procurement Activity**

Procurement activities are activities of duration reflecting contractor preparation and submittal of material submittals, department approval of material submittals, material fabrication durations, and material delivery durations.

**Work Breakdown Structure (WBS)**

A framework for organizing the activities that makes up a project by breaking the project into successively greater detail by level. A WBS organizes the project work. It does not address the sequencing and scheduling of project activities.

**108.4.4 Department’s Preliminary Construction Schedule**

The department’s Preliminary Construction Schedule was developed during the design phase of the contract. Its purpose was to illustrate work areas per Stage/Phase of construction. Durations and resource availability are department estimates only. Contractor is solely responsible for its use of means and methods and as such is fully responsible for determining durations based on own estimate of production and available resources. The suggested use of the department’s Preliminary Construction Schedule is ease of identification of work availability during each Stage/Phase and the logical relationship between the Stages/Phases. The Preliminary Construction Schedule reflects one possible approach to completing the work, consistent with the traffic phasing requirements and the interim/final completion date(s) contained in the contract. The logic contained in the Preliminary Construction Schedule is not intended to alter or supplement contract requirements for the phasing of the work, but to reflect those requirements. Any reliance on the department’s Preliminary Construction Schedule is at the sole risk of the contractor.

**108.4.5 Contractor’s Scheduling Responsibilities**

The CPM Schedule shall be a tool capable of forward planning and monitoring the Project. The schedule will further be used as a communication tool between the contractor and the department. It will be used to illustrate the plan, develop what-if scenarios, and analyze impacts. The accuracy and completeness of the CPM Schedule will benefit both the contractor and the department. The CPM schedule is the contractor’s committed plan to complete all work within the completion deadlines.

The contractor shall submit to the department initial and monthly update schedules, each consistent in all respects with the time and order of work requirements of the contract. The project work shall be executed in the sequence indicated on the current accepted schedule. Schedules shall show the order in which the contractor proposes to carry out the work with logical links between activities, and calculations made using the critical path method to determine the controlling operation or operations. The contractor is responsible for assuring that each schedule shows a coordinated plan for complete performance of the work. Schedule the Work in the manner required to achieve the completion date and intermediate milestone dates specified in the Prosecution and Progress Special Provision.

Contactor project management personnel shall actively participate in the schedule development, the monthly updating of progress, and all schedule revisions throughout the entire duration of the contract. Subcontractors and suppliers working on the project shall also contribute in developing and maintaining an accurate schedule.

**108.4.6 Submittals**

**108.4.6.1 Initial Work Plan Schedule**

Submit an Initial Work Plan (IWP) Schedule consisting of the following:

1. Provide a detailed plan of activities to be performed during the first 90 calendar days of the contract. Provide construction activities with durations not greater than 28 calendar days (20 business days), unless the engineer accepts requested exceptions.

2. Provide activities as necessary to depict administrative work, including submittals, reviews, material procurements, inspections, and all else necessary to complete the work as described in the contract documents. Activities other than construction activities may have durations greater than 28 calendar days (20 business days).

3. Provide activities as necessary to depict third-party work related to the contract.

4. Provide summary activities for the balance of the project beyond the first 90 calendar days of the project. Summary activities may have durations greater than 28 calendar days (20 business days).

5. Submit the IWP Schedule, including the P6 native data file (XER) and an electronic file (PDF). Submit the P6 native data file (XER) and an electronic file (PDF) to the following DOT email boxes; [DOTDTSDSWMEGASCHEDULERS@dot.wi.gov](mailto:DOTDTSDSWMEGASCHEDULERS@dot.wi.gov) and [I39project@dot.wi.gov](mailto:I39project@dot.wi.gov).

6. Following department receipt of the IWP Schedule, allow 10 business days for department review and return of comments. Within 5 business days of receiving the IWP Schedule, the department will schedule a workshop for the contractor to present the IWP Schedule and to answer questions raised during the department’s review. Provide formal responses to the comments and resubmit the IWP Schedule as necessary. A notice to proceed will not be issued until the engineer accepts the IWP Schedule. The department will use the IWP Schedule to monitor the progress of the work until the Baseline CPM Progress Schedule is accepted.

7. Submit an updated version of the IWP Schedule on a bi-monthly basis (every other week) until the engineer accepts the Baseline CPM Progress Schedule. With each update, include actual start dates, completion percentages, and remaining durations for activities started but not completed. Include actual finish dates for completed activities.

**108.4.6.2 Baseline CPM Progress Schedule**

Within 10 business days of receiving an approved IWP Schedule, as required in the contract, submit a Baseline CPM Progress Schedule and written narrative consisting of the following:

1. Develop the Baseline CPM schedule. The Baseline CPM is the contractor’s committed plan to complete the Work within the time frames required to achieve the contract completion date and intermediate milestone dates. The department will use the schedule to monitor the progress of the work. Include the following:

1.1 Provide a detailed plan of activities to be performed during the entire contract duration, including all administrative and construction activities required to complete the work as described in the contract documents. Provide construction activities with durations not greater than 28 calendar days (20 business days), unless the engineer accepts requested exceptions.

1.2 Provide activities as necessary to depict administrative work, including submittals, reviews, material procurements, inspections, and all else necessary to complete the work as described in the contract documents. Activities other than construction activities may have durations greater than 28 calendar days (20 business days).

1.3 Provide activities as necessary to depict third-party work related to the contract. Third-party work activities may include but is not limited to Railroads, Utilities, Real Estate and local government agencies.

1.4 Make allowance for specified work restrictions, non-working days, time constraints, calendars, and potential or approved weather delays; reflect involvement and reviews by the department; and coordination efforts with adjacent contractors, utility owners, and other third parties.

1.5 With the exception of the Project Start Milestone and Project Completion Milestone, all activities must have predecessors and successors. Predecessors and successors shall not be linked to the same activity with different relationship types. The start of an activity shall have a Start-to-Start or Finish-to-Start relationship with preceding activities. The completion of an activity shall have a Finish-to-Start or Finish- to-Finish relationship with succeeding activities. Do not use Start-to-Finish relationships. Do not use Finish-to-Start relationships with a lag or overlap unless the engineer accepts requested exceptions. Include and discuss request for exceptions in the schedule narrative provided with each schedule submittal.

1.6 Schedule activities shall include the following:

a. A clear and legible description. The use of abbreviations shall be limited. Descriptions shall include an action verb describing the work performed, a basic description of the materials used, and, where applicable, a general location of the work.

b. Codes for Contract ID / WisDOT Project ID, Responsibility, Stage, and Area. The department may provide additional codes for use within department reporting.

c. Activities shall carry a single Responsibility assignment.

1.1 Schedule all intermediate milestones in the proper sequence and input as either a “Start on or After” or “Finish on or Before” date. Do not use other constraint types, within the software, without prior approval by the engineer. Do not apply date constraints on any work tasks without prior approval by the engineer. Provide predecessors and successors for each intermediate milestone as necessary to model each Stage of the Work. Unless the engineer accepts a requested exception, the schedule shall encompass all the time in the contract period between the starting date and the specified completion date.

1.2 Develop and submit an anticipated cash-flow curve for the project within the P6 application, based on the Baseline CPM schedule by assigning cost values to selective work tasks within the CPM schedule that total the value of the contract.

1.3 Provide budgeted quantities consistent with the bid quantities on selective construction tasks within the CPM schedule. The engineer will provide a summarized list of 30 generalized quantity items that will be identified and applied by the contractor using the P6 software application.

2. Provide an electronic PDF of the CPM schedule depicting the CPM network. Organize the logic diagram by grouping related activities, based on the activity codes in the CPM.

3. Provide a written narrative with the Baseline CPM explaining the planned sequence of work, as-planned critical path, critical activities for achieving intermediate milestone dates, traffic phasing, and planned labor and equipment resources. Use the narrative to further explain:

3.1 The basis for activity durations in terms of production rates for each major type of work (number of shifts per day and number of hours per shift), and equipment usage and limitations.

3.2 Use of constraints.

3.3 Use of calendars.

3.4 Estimated number of adverse weather days on a monthly-basis.

3.5 Scheduling of permit and environmental constraints, and coordination of the schedule with other contractors, utilities, and public entities.

4. Submit the Baseline CPM schedule including the P6 native data file (XER) and an electronic file (PDF). Submit the P6 native data file (XER) and an electronic file (PDF) to the following dot email boxes; [DOTDTSDSWMEGASCHEDULERS@dot.wi.gov](mailto:DOTDTSDSWMEGASCHEDULERS@dot.wi.gov) and [I39project@dot.wi.gov](mailto:I39project@dot.wi.gov).

Within 10 business days of receiving the Baseline CPM schedule, the department will schedule a workshop, review the submittal, and return review comments.

Within 5 business days after the Baseline CPM scheduling workshop, the department will either accept the contractor’s Baseline CPM schedule or provide additional comments. Within 5 business days, address the department’s comments and resubmit a revised Baseline CPM, including formal responses to the department’s review comments. If the engineer requests justifications for activity durations provide information that may include estimated labor, equipment, unit quantities, and production rates used to determine the activity duration.

The engineer will accept the Baseline CPM based solely on whether the schedule is complete as specified in this section and meets the requirements of the contract. The engineer’s acceptance of the schedule does not modify the contract and does not relieve the contractor from meeting the contract requirements.

The department will not consider requests for contract time extensions as specified in 108.10 or additional compensation for delay specified in standard spec 109.4.7 until the department accepts the Baseline CPM schedule.

**108.4.6.3 Monthly CPM Schedule Updates**

Submit CPM Schedule updates on a monthly basis after acceptance of the Baseline CPM Schedule. With each CPM Schedule update, include the following:

1. Actual start dates, completion percentages, and remaining durations for activities started but not completed, and actual finish dates for completed activities, through the final acceptance of the project.

2. Additional activities as necessary to depict additions to the contract by changes and logic revisions as necessary to reflect changes in the contractor’s plan for prosecuting the work.

3. Include a narrative report that includes a brief description of monthly progress, changes to the critical path from the previous update, sources of potential delay, work planned for the next 30 calendar days, and all changes to the CPM Schedule. Changes to the CPM Schedule include the addition or deletion of activities, changes to activity descriptions, original durations, relationships, overlap (lag/lead), constraints, calendars, or previously recorded actual dates. Justify changes to the CPM Schedule in the narrative by describing associated changes in the planned methods or manner of performing the work or changes in the work itself.

4. Submit each CPM Schedule update; including the P6 native data file (XER) and an electronic file (PDF) on 3 separate CD-ROM’s. Submit the P6 native data file (XER), the electronic file (PDF), responses to the DOT review comments, and the progress schedule update narrative to the following dot email boxes; [DOTDTSDSWMEGASCHEDULERS@dot.wi.gov](mailto:DOTDTSDSWMEGASCHEDULERS@dot.wi.gov) and I39project@dot.wi.gov.

5. Within 10 business days of receiving each CPM Schedule update, the engineer will provide formal review comments and schedule a meeting, if necessary, to address comments raised in the department’s review. Address the department’s comments and resubmit a revised CPM Schedule update within 5 business days after the department's request.

**108.4.6.4 Three-Week Look-Ahead Schedules**

Submit Three-Week Look-Ahead Schedules on a weekly basis after NTP. The schedule shall be prepared by computer. Provide 3 hard copies (11” x 17”) to the engineer. With each Three-Week Look-Ahead include:

1. Activities underway and as-built dates for the past week.

2. Actual as-built dates for completed activities through final acceptance of the project.

3. Planned work for the upcoming 3-week period.

4. The activities of the Three-Week Look-Ahead schedule shall include the activities underway and critical RFIs and submittals, based on the CPM schedule. The Three‑Week Look-Ahead may also include details on other activities not individually represented in the CPM schedule.

5. On a weekly basis, the department and the contractor shall agree on the as-built dates depicted in the Three-Week Look-Ahead schedule or document any disagreements. Use the as-built dates from the Three-Week Look- Ahead schedules for the month when updating the CPM schedule.

**108.4.6.5 Weekly Production Data**

Provide estimated and actual weekly production curves for items of work on a weekly basis for applicable items of work as requested by the department including but not limited to the following:

1. Provide data on the following items by the units specified:

Underground Facilities – LF per week

Retaining Walls – SF per week

* + MSE Walls
  + Other Wall Types

Bridge Construction

* + Foundation Pile – EACH per week
  + Foundation/Substructure Concrete – CY per week
  + Structural Steel Girders – EACH per week
  + Prestressed Concrete Girders – EACH per week
  + Deck Formwork – SF per week
  + Roadway Excavation – CY per week
  + Roadway Embankment – CY per week

Roadway Structural Section

* + Grading/Subgrade Preparation – SY per week
  + Base Material Placement – TON per week
  + Base Material Subgrade Preparation – SY per week
  + Asphaltic Base – TON per week
  + Asphaltic and HMA Pavements – TON per week
  + Concrete Pavement – SY per week
  + Concrete Pavement – CY per week
  + Finishing Items – SY per week

Note: Base material shall include all breaker run, base aggregate, subbase items or other base items included in the contract. Provide production information for each individual base material item.

2. For each item, indicate the actual daily production for the past week and the anticipated weekly production for the next week. Also include cumulative production curves showing the production information for each item to date.

3. Submit the data in an electronic spreadsheet format at the same time the Three‑Week Look-Ahead is submitted. On a weekly basis, the department and the contractor shall agree on the production data or document any disagreements.

**108.4.7 Progress Review Meetings**

After completing the weekly submittal of the Three‑Week Look-Ahead Schedules and production data, attend a weekly progress review meeting to review the submittals with the department. At the meeting, address comments as necessary, and document agreement or disagreement with the department.

After submitting the monthly update and receiving the engineer’s comments, attend a job‑site meeting, as scheduled by the engineer, to review the progress of the schedule. At that meeting, address comments as necessary, and document agreement or disagreement with the department. The monthly meeting will be coordinated to take place on the same day and immediately before or after a weekly meeting, whenever possible.

**108.4.8 CPM Progress Schedule Revisions**

A CPM Progress Schedule Revision may be submitted, prior to the next CPM Monthly Update, if necessary due to changes in the Work or project conditions as authorized by the engineer. Prepare the CPM Revision in the same format as required for CPM Monthly Updates, including justification for changes to the schedule. The process for comment and acceptance of a CPM Revision will be the same as for CPM Monthly Updates. If the CPM Revision is accepted, prepare the next monthly update based on the revised CPM. If the CPM Revision is rejected, prepare the next monthly update based on the previous month’s update.

The engineer will monitor the progress of the work and may request revisions to the CPM schedule. Revise the schedule as requested by the engineer, and submit a CPM Progress Schedule Revision within 10 business days of the request. The process for comment and acceptance of a CPM Revision will be the same as for CPM Monthly Updates. The engineer may request that the contractor revise the CPM schedule for one or more of the following reasons:

1. The forecast completion date is scheduled to occur more than 14 calendar days after the contract completion date.

2. An intermediate milestone is scheduled to occur more than 14 calendar days after the date required by the contract.

3. The engineer determines that the progress of the work differs significantly from the current schedule.

4. A contract change order requires the addition, deletion, or revision of activities that causes a change in the contractor’s work sequence or the method and manner of performing the work.

**108.4.9 Documentation Required for Time Extension Requests**

The information below is to be applied in compliance with Standard Specifications 108.9 and 108.10 and does not replace the above mentioned specifications. To request a time extension to an intermediate milestone date or the contract completion date associated with changes to the work, provide a narrative document separate from the monthly schedule update narrative document that specifically details the work added or deleted and the other activities affected and or impacted based on the latest accepted CPM Monthly Update. For added work including impact delay activities, submit a proposed fragnet of activities to be added or revised in the CPM schedule, indicating how the fragnet is to be tied to the CPM schedule.

To request a time extension to an intermediate milestone date or the contract completion date associated with delays to the work, provide a narrative detailing the affected activities and the cause of the delay, based on the latest accepted CPM Monthly Update. Requests for time extensions due to delays shall meet the following criteria:

1. For requests to extend the contract completion date, include a detailed description of how the delay, or additional work, affected the project’s critical path, based on the latest accepted CPM Monthly Update.

2. For requests to extend an intermediate milestone date, include a description of how the delay, or additional work, affected the controlling (longest) path to the milestone, based on the latest accepted CPM Monthly Update.

3. The department and the contractor agree that the float is not for the exclusive use or financial benefit of either party. Either party has the full use of the float on a first come basis until it is depleted.

**108.4.10 Measurement for CPM Progress Schedule**

The department will measure Baseline CPM Progress Schedule for each required submittal acceptably completed.

The department will measure CPM Progress Schedule Updates and Accepted Revisions for each required submittal acceptably completed.

**108.4.11 Payment for CPM Progress Schedule**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.001 | Baseline CPM Progress Schedule | EACH |
| SPV.0060.002 | CPM Progress Schedule Updates and Accepted Revisions | EACH |

Payment is full compensation for furnishing all work required under these bid items. The department will pay the contract unit price for the Baseline CPM Progress Schedule after the department accepts the schedule. Thereafter, the department will pay the contract unit price for each monthly CPM Progress Schedule update acceptably completed. The department will pay the contract unit price for CPM Revisions, if the department accepts the revision. The department will not pay for proposed revisions that are not accepted.

Failure to provide satisfactory schedule submittals within the times specified will result in liquidated damages being assessed and may result in the department managing to the contractor’s latest accepted schedule until such time as the contractor submits an updated or revised schedule.

If the contractor does not provide satisfactory progress schedule submittals, updates and revisions, within the time specified by these specifications, the department will assess liquidated damages. The department will deduct the amount of $500 per calendar day due to the contractor for every calendar day that the submission of the Initial Work Plan Schedule, Baseline CPM Progress Schedule, Revised CPM Progress Schedule, and the Monthly Progress Schedule is delinquent.

If the Initial Work Plan Schedule, Baseline CPM Progress Schedule, Revised CPM Progress Schedule, and the Monthly Progress Schedule update submittals are not received by the department within 10 business days after the submittal time specified, and, within 10 days of the submittal date, the engineer finds the schedule submittal unacceptable, the department will only make progress payments for the value of materials, as specified in standard spec 109.6.3.2.1, until the schedule is submitted and found acceptable.

(10/25/2017)

1. Test Pits, Item SPV.0060.003.

**A Description**

This special provision describes excavating test pits and backfilling as directed by the engineer and geotechnical engineer and as hereinafter provided. Test pits are for the purpose of locating and relieving trapped water within the existing roadway embankments.

**B Materials**

Construct test pits conforming to standard spec 205.2 for Roadway Excavation.

Provide materials to conform to standard spec 312.2 for Select Crushed Material.

**C Construction**

All excavation of test pits shall be performed during daytime hours. The engineer and geotechnical engineer (Hassen A. Hassen, [Hassen.Hassen@dot.wi.gov](mailto:hassen.hassen@dot.wi.gov)) shall be present during excavation.

The location of test pits shall be determined by the engineer and geotechnical engineer. Contact the engineer at least 4 weeks prior to earthwork operations. Test pits shall be excavated at least 2 weeks prior to roadway excavation operations. Different timelines, to meet particular projects’ needs, may be required by the engineer and geotechnical engineer.

Excavate the foreslope of the existing roadway embankment beginning at the edge of the existing subgrade shoulder point at a slope of 1:1 down to the elevation of the toe of existing slope, but no lower than 1 foot above the ditch flow line if a ditch is present. Excavations shall be 10 feet wide measured parallel to the roadway shoulder. The bottom of the test pit shall be sloped to drain away from the roadway.

If water is present or seeping from the embankment, backfill with select crushed where the test pit is located on an embankment that is supporting live traffic. Place select crushed to stabilize the test pit and allow water to seep out. If the embankment is not supporting live traffic, then the test pit shall remain open and maintained until seeping stops or as approved by the engineer and geotechnical engineer.

If water is not present or seeping from the embankment, backfill the test pit with roadway embankment or a material approved by the engineer and geotechnical engineer.

**D Measurement**

The department will measure Test Pits by each unit, acceptably installed.

The department will measure Select Crushed Material as specified in standard spec 312.4.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.003 | Test Pits | EACH |

Payment is full compensation for furnishing all engineer approved work specified including excavating, sloping, shaping, stockpiling, backfilling with select crushed material, compacting, and maintaining.

The department will pay for select crushed material under the select crushed item 312.0110. The department will pay for erosion control, if required, under the erosion control bid items.

1. Roadway Cleanup, Item SPV.0060.004.

**A Description**

This special provision describes removing trash, tires and other debris from the IH 39 roadway during construction operations.

**B (Vacant)**

**C Construction**

Roadway cleanup will be scheduled by the department to occur on a once per month basis. For months with holiday work restrictions, the cleanup will be scheduled to occur immediately prior to the holiday break. The cleanup will occur on a weeknight, Tuesday thru Thursday, during the time from 12:00 AM to 5:00 AM.

Traffic control for roadway cleanup will be provided by the department with the assistance of the Wisconsin State Patrol. A rolling slowdown will be used for traffic control. The necessary advanced signing and law enforcement personnel will be required to be on site prior to and during the rolling slowdown operation. Arrangements for implementing a rolling slowdown on IH 39 will be made by Jeff Gustafson at the Southwest Region Madison Office (608-516-6400). A rolling slowdown will only be allowed in one direction (northbound or southbound) at a time. Concurrent northbound and southbound rolling slowdowns will not be allowed. A northbound rolling slowdown will occur immediately following a southbound rolling slowdown, or vice versa, to complete the roadway cleanup loop (both northbound and southbound) for the project length.

Provide personnel and equipment capable of retrieving and transporting all types of roadway debris from the travel lanes and shoulders. All debris shall be removed from the roadway and shoulder areas. The debris removal area shall be extended along the outside shoulders to include the construction clear zone.

**D Measurement**

The department will measure Roadway Cleanup as each individual unit acceptably completed which includes both directions of the roadway (northbound and southbound) for the length of 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 |
| SPV.0060.004 | Roadway Cleanup | Each |

Payment is full compensation for Payment is full compensation for providing personnel and equipment to remove debris from the traffic lanes and shoulders for both directions (northbound and southbound) of IH 39, and disposal of collected debris for the duration of the project during construction operations.

1. Install Department Furnished Crash Cushion Low Maintenance, Item SPV.0060.201.

**A Description**

This special provision describes transporting, installing, and salvaging a department-furnished low maintenance crash cushion at a location as directed by the engineer in accordance with section 614 of the standard specifications, and as hereinafter provided. Maintenance/repair of a department furnished low maintenance crash cushion is covered under a separate bid item.

**B Materials**

*Replace the first sentence of standard spec 614.2.7(1) with the following:*

The department will furnish the low maintenance crash cushion (Model SCI 100GM Crash Attenuator from Smart Cushion Innovations (SCI) Products).

Pick-up and transport the department-furnished low maintenance crash cushion from the department’s designated storage site to the project’s installation site upon coordination and approval from the engineer.

**C Construction**

*Replace the first sentence of standard spec 614.3.4(1) with the following:*

Install a department-furnished low maintenance crash cushion at locations directed by the engineer within 3 days of receiving notification from the engineer.

When its use is no longer needed, the department-furnished low maintenance crash cushion shall be salvaged and returned to the department’s storage site.

**D Measurement**

The department will measure Install Department Furnished Crash Cushion Low Maintenance, 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 |
| SPV.0060.201 | Install Department Furnished Crash Cushion Low Maintenance | Each |

Payment is full compensation for pick-up and transport from the department’s designated storage site to the project, installation, salvaging and transport back to the department’s storage site of a department-furnished low maintenance crash cushion as described in this article.

(10/11/2017)

1. Repair State Owned Crash Cushion Low Maintenance, Item SPV.0060.202.

**A Description**

This special provision describes providing emergency repair services, including the replacement of unusable components or hardware, for state owned crash cushions located on IH 39 or an IH 39 ramp that are damaged due to a vehicular collision during the time this contract is in effect. This work shall be in accordance with section 614 of the standard specifications, as directed by the engineer, and as hereinafter provided. Repair of a state owned low maintenance crash cushion is covered under a separate bid item. Responding to the incident site with the appropriate staff, equipment and materials is covered under a separate bid item.

**B Materials (Vacant)**

**C Construction**

Repairs shall be completed as quickly as possible once repair work is started. Repair work shall be completed off of the traveled way to the maximum extent possible.

Additional traffic control measures may be required depending on the severity and duration of the incident. The contractor shall provide any needed traffic control measures as directed by the engineer.

**D Measurement**

The department will measure Repair State Owned Crash Cushion as each individual unit acceptably repaired.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.202 | Repair State Owned Crash Cushion Low Maintenance | Each |

Payment is full compensation for completing the necessary repair work to restore the state owned crash cushion to a safe and operational condition, including replacement of damaged, unusable components.

The department will pay for additional traffic control measures, if required, under the respective traffic control bid items in the contract.

(10/24/2017)

1. Repair State Owned Energy Absorbing Terminal (EAT), Item SPV.0060.203; Repair State Owned Guardrail, Item SPV.0090.200.

**A Description**

This special provision describes providing emergency repair services, including the replacement of unusable components or hardware, for state owned energy absorbing terminals or guardrail located on IH 39 or an IH 39 ramp that is damaged due to a vehicular collision during the time this contract is in effect. This work shall be in accordance with section 614 of the standard specifications, as directed by the engineer, and as hereinafter provided. Responding to the incident site with the appropriate staff, equipment and materials is covered under a separate bid item.

**B Materials (Vacant)**

**C Construction**

Repairs shall be completed as quickly as possible once repair work is started. Repair work shall be completed off of the traveled way to the maximum extent possible.

Additional traffic control measures may be required depending on the severity and duration of the incident. The contractor shall provide any needed traffic control measures as directed by the engineer.

**D Measurement**

The department will measure Repair State Owned Energy Absorbing Terminal (EAT) as each individual unit acceptably repaired. The department will measure Repair State Owned Guardrail by the linear foot acceptably repaired.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.203 | Repair State Owned Energy Absorbing Terminal (EAT) | Each |
| SPV.0090.200 | Repair State Owned Guardrail | LF |

Payment is full compensation for completing the necessary repair work to restore the state owned semi-rigid barrier system to a safe and operational condition, including replacement of damaged, unusable hardware.

The department will pay for additional traffic control measures, if required, under the respective traffic control bid items in the contract.

(10/24/2017)

1. Emergency Response to Traffic Incident Involving Guardrail or EAT, Item SPV.0060.204.

**A Description**

This special provision describes providing prompt response to an emergency repair request involving a damaged guardrail or an Energy Absorbing Terminal (EAT) device on IH 39 or an IH 39 ramp that is damaged due to a vehicular collision during the time this contract is in effect.

**B Materials (Vacant)**

**C Construction**

The contractor shall provide appropriate staff to the incident site within 45 minutes of receiving a repair request from the responding agency. Staff deployed shall be capable of immediately assessing the severity of the damage to the device and consult with the department’s representative on potential repair or replacement options and the projected timeline to restore the roadside device to its proper working condition. The contractor shall provide a time log of when the repair request was received and when staff arrived at the incident site. This information shall be submitted to the engineer, for verification, within 24 hours of the repair completion.

Contact information for the contractor’s responsible party (the person or persons in charge of coordinating repair efforts) shall be submitted to the engineer at the pre-construction meeting. This person(s) shall be available 24/7 during the duration of this contract. The contact information for the department’s representative will be supplied to the contractor at the pre-construction meeting.

If the contractor fails to be on-site of an incident with appropriate staff within 45 minutes of receiving a repair request, the department will assess the contractor $2,500 in liquidated damages for each 15-minute interval that the contractor is not present following the allotted 45-minute response time. Increments of 15 minutes or less will be assessed as a 15-minute increment. The engineer, or designated representative, will be the sole authority in determining assessable 15-minute increments. Liquidated damages will be assessed under the administrative item Failing to Open Road to Traffic.

For contractor owned devices, repair work shall be completed in accordance with section 614 of the standard specifications, and as directed by the engineer. For state-owned devices, repair work is covered under articles “Repair State Owned Guardrail” and “Repair State Owned EAT” of these special provisions. In either case, once repair work has been started, work shall continue until completion. Repair work shall be completed off the traveled way to the maximum extent allowable.

Additional traffic control measures may be required depending on the severity and duration of the incident. The contractor shall provide any needed traffic control measures as directed by the department’s representative

**D Measurement**

The department will measure Emergency Response to Traffic Incident Involving Guardrail or EAT as each individual response acceptably completed.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.204 | Emergency Response to Traffic Incident Involving Guardrail or EAT | EACH |

Payment is full compensation for providing a prompt staff response to an emergency repair request for a damaged guardrail or an EAT located within the project limits.

The cost of providing the appropriate level of on-call staff for 24/7 incident response shall be included in the Mobilization bid item for this project.

The department will pay for any additional traffic control measures, if required, under the respective traffic control bid items in the contract.

(11/29/2017)

1. Emergency Response to Pavement Repairs, Item SPV.0060.205.

**A Description**

This special provision describes providing prompt response to an emergency repair request of damaged or deteriorated concrete or HMA pavement located on IH 39 or an IH 39 ramp. The provisions of this article will not be applicable during a project’s winter shutdown period.

**B Materials (Vacant)**

**C Construction**

The contractor shall provide staff, equipment, and materials to the incident site within 45 minutes of receiving a repair request from the responding agency. The contractor shall consult with the department’s representative on potential repair or replacement options to restore the damaged or deteriorated pavement section to a safe and drivable condition. Staff and equipment deployed shall be capable of completing the needed repairs as quickly as possible once repair work is started. The contractor shall provide a time log of when the repair request was received and when staff arrived at the incident site. This information shall be submitted to the engineer, for verification, within 24 hours of the repair completion.

Contact information for the contractor’s responsible party (the person or persons in charge of coordinating and completing repair efforts) shall be submitted to the engineer at the pre-construction meeting. This person(s) shall be available 24/7 during the duration of this contract. The contact information for the department’s representative will be supplied to the contractor at the pre-construction meeting.

If the contractor fails to be on-site of an incident with appropriate staff and equipment within 45 minutes of receiving a repair request, the department will assess the contractor $2,500 in liquidated damages for each 15-minute interval that the contractor is not present following the allotted 45-minute response time. Increments of 15 minutes or less will be assessed as a 15-minute increment. The engineer, or designated representative, will be the sole authority in determining assessable 15-minute increments. Liquidated damages will be assessed under the administrative item Failing to Open Road to Traffic.

Additional traffic control measures may be required depending on the severity and duration of the incident. The contractor shall provide any needed traffic control measures as directed by the department’s representative.

**D Measurement**

The department will measure Emergency Response to Pavement Repairs as each individual response acceptably completed.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.205 | Emergency Response to Pavement Repairs | EACH |

Payment is full compensation for providing prompt response to an emergency repair request for damaged or deteriorated concrete or HMA pavement located within the project’s construction limits.

The cost of providing the appropriate level of on-call staff, equipment, and materials for 24/7 incident response shall be included in the Mobilization bid item for this project.

The department will pay for concrete pavement or HMA pavement repairs under the respective concrete pavement or HMA pavement bid items in the contract.

The department will pay for any additional traffic control measures, if required, under the respective traffic control bid items in the contract.

(5/6/2019)

1. Emergency Response to Traffic Incident Involving Concrete Barrier Temporary Precast, Item SPV.0060.206.

**A Description**

This special provision describes providing prompt response to an emergency repair request for damaged and/or dislodged temporary concrete barrier located on IH 39 or an IH 39 ramp that is damaged or displaced due to a vehicular collision during the time this contract is in effect.

**B Materials (Vacant)**

**C Construction**

The contractor shall provide staff, equipment, and materials to the incident site within 45 minutes of receiving a repair request from the responding agency. The contractor shall consult with the department’s representative on potential repair or replacement options to restore the temporary concrete barrier to proper working condition. Staff and equipment deployed shall be capable of completing the needed repairs as quickly as possible once repair work is started. Repair work shall be completed off the traveled way to the maximum extent allowable. The contractor shall provide a time log of when the repair request was received and when staff arrived at the incident site. This information shall be submitted to the engineer, for verification, within 24 hours of the repair completion.

Contact information for the contractor’s responsible party (the person or persons in charge of coordinating and completing repair efforts) shall be submitted to the engineer at the pre-construction meeting. This person(s) shall be available 24/7 during the duration of this contract. The contact information for the department’s representative will be supplied to the contractor at the pre-construction meeting.

If the contractor fails to be on-site of an incident with appropriate staff and equipment within 45 minutes of receiving a repair request, the department will assess the contractor $2,500 in liquidated damages for each 15-minute interval that the contractor is not present following the allotted 45-minute response time. Increments of 15 minutes or less will be assessed as a 15-minute increment. The engineer, or designated representative, will be the sole authority in determining assessable 15-minute increments. Liquidated damages will be assessed under the administrative item Failing to Open Road to Traffic.

For contractor owned temporary barrier, repair work shall be completed in accordance with sections 603 and 643 of the standard specifications, and as directed by the engineer. For state-owned temporary barrier, repair work is covered under article “Repair State Owned Concrete Barrier Temporary Precast” of these special provisions.

Additional traffic control measures may be required depending on the severity and duration of the incident. The contractor shall provide any needed traffic control measures as directed by the department’s representative.

**D Measurement**

The department will measure Emergency Response to Traffic Incident Involving Concrete Barrier Temporary Precast as each individual response acceptably completed.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.206 | Emergency Response to Traffic Incident Involving Concrete Barrier Temporary Precast | EACH |

Payment is full compensation for providing prompt response to an emergency repair request for damaged and/or dislodged temporary concrete barrier located within the project limits.

The cost of providing the appropriate level of on-call staff, equipment, and materials for 24/7 incident response shall be included in the Mobilization bid item for this project.

The department will pay for any additional traffic control measures, if required, under the respective traffic control bid items in the contract.

(11/29/2017)

1. Emergency Response to Traffic Incident Involving Crash Cushion, Item SPV.0060.207.

**A Description**

This special provision describes providing prompt response to an emergency repair request involving a damaged crash cushion device on IH 39 or an IH 39 ramp that is displaced or damaged due to a vehicular collision during the time this contract is in effect.

**B Materials (Vacant)**

**C Construction**

The contractor shall provide appropriate staff to the incident site within 45 minutes of receiving a repair request from the responding agency. Staff deployed shall be capable of immediately assessing the severity of the damage to the device and consult with the department’s representative on potential repair or replacement options and the projected timeline to restore the roadside device to its proper working condition. The contractor shall provide a time log of when the repair request was received and when staff arrived at the incident site. This information shall be submitted to the engineer, for verification, within 24 hours of the repair completion.

Contact information for the contractor’s responsible party (the person or persons in charge of coordinating repair efforts) shall be submitted to the engineer at the pre-construction meeting. This person(s) shall be available 24/7 during the duration of this contract. The contact information for the department’s representative will be supplied to the contractor at the pre-construction meeting.

If the contractor fails to be on-site of an incident with appropriate staff within 45 minutes of receiving a repair request, the department will assess the contractor $2,500 in liquidated damages for each 15-minute interval that the contractor is not present following the allotted 45-minute response time. Increments of 15 minutes or less will be assessed as a 15-minute increment. The engineer, or designated representative, will be the sole authority in determining assessable 15-minute increments. Liquidated damages will be assessed under the administrative item Failing to Open Road to Traffic.

For contractor owned devices, repair work shall be completed in accordance with section 614 of the standard specifications, and as directed by the engineer. For state-owned devices, repair work is covered under articles “Repair State Owned Crash Cushion” or “Repair State Owned Crash Cushion Low Maintenance” of these special provisions. In either case, once repair work has been started, work shall continue until completion. Repair work shall be completed off the traveled way to the maximum extent allowable.

Additional traffic control measures may be required depending on the severity and duration of the incident. The contractor shall provide any needed traffic control measures as directed by the department’s representative.

**D Measurement**

The department will measure Emergency Response to Traffic Incident Involving Crash Cushion as each individual response acceptably completed.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.207 | Emergency Response to Traffic Incident Involving Crash Cushion | EACH |

Payment is full compensation for providing a prompt staff response to an emergency repair request for a damaged crash cushion device located within the project limits.

The cost of providing the appropriate level of on-call staff for 24/7 incident response shall be included in the Mobilization bid item for this project.

The department will pay for any additional traffic control measures, if required, under the respective traffic control bid items in the contract.

(11/29/2017)

1. Bar Steel Reinforcement HS Textured Coated Structures, Item SPV.0085.700.

SPV special provision to be provided by BOS (anticipated after PS&E submittal).

1. Bar Steel Reinforcement HS Galvanized Structures, Item SPV.0085.701.

SPV special provision to be provided by BOS (anticipated after PS&E submittal).

1. Concrete Pavement Joint Sealing, Item SPV.0090.001.

**A Description**

This special provision provides for the sealing of the longitudinal joint located a distance, as shown on the plans, from the base of S42 and S42A concrete barrier only when this joint is created by a full-depth sawcut. Joint sealing shall consist of cleaning the joint in preparation for sealing and sealing the joint in the concrete pavement with a hot applied joint sealing material.

**B Materials**

All designated joints shall be sealed with a hot applied joint sealant conforming to the Specification for Joint and Crack Sealants, Hot-Applied, for Concrete and Asphalt Pavements, ASTM Designation D6690, type II. A Certification of Compliance shall be furnished to the engineer prior to application.

Sawed joints designated to be sealed under this bid item will not require Concrete Protective Surface Treatment as described in a separate article of these special provisions.

**C Construction**

The operation of sealing shall be performed as soon as practicable upon elapse of the curing period and in any event prior to the time traffic of any kind uses the pavement.

Joints shall not be sealed until they have been inspected and approved by the engineer.

Application of the joint sealer shall be made when the joint surfaces are clean and dry.

Immediately before sealing the joint, thoroughly clean the joints of all laitance, curing compound and other foreign material. Exposed joint faces shall be cleaned by sandblasting, or by water blasting with sufficient pressure to thoroughly and completely clean the joint. A multiple-pass technique shall be used until the surfaces are free of material that might prevent bonding. For final cleaning immediately prior to installation of the sealer, the joints shall be blown clean with oil-free compressed air. The joint faces must be surface dry when sealant is applied.

The sealing compound shall be heated 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. The heating kettle shall be equipped with a mechanical agitator, positive temperature control and an approved dial thermometer for checking temperatures of the compound. The heating kettle, if and when operated on concrete, shall be properly insulated against the radiation of heat to the concrete surface.

The sealing compound shall not be heated above the maximum safe heating temperature. The maximum safe heating temperature shall be determined from tests made on samples from each lot or shipment of the material delivered to the project. When so approved by the engineer, the manufacturer’s recommended maximum safe heating temperature may be used in lieu of test determinations where relatively small quantities of sealer are used. Any material heated above the maximum safe heating temperature shall be discarded.

Pouring of joints shall be made when the sealing material is at the required temperature and, insofar as practicable, the sealing compound shall be maintained at a uniform temperature during pouring operations. Pouring shall not be permitted when the temperature of the sealing compound in the applicator, as it is applied to the joint, is more than 10° F below the recommended pouring temperature. Pouring of the molten sealer in the joint opening shall be done with such equipment that the sealer completely fills the joint opening without overflowing on the adjoining surface and when finished, after shrinkage, the sealer is approximately flush with the adjoining surfaces. In the event satisfactory sealing of a joint is not accomplished in a single pouring, the sealing compound shall be placed in 2 pours. At least one-half of the required amount shall be placed in the first pouring, and the second pouring shall follow the first as soon as practicable after the first pouring has attained maximum shrinkage but not later than 1 hour after the first pouring.

**D Measurement**

The department will measure Concrete Pavement Joint Sealing by the linear foot in place along the joint, acceptably completed.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0090.001 | Concrete Pavement Joint Sealing | LF |

Payment is full compensation for cleaning the joint, and for furnishing and applying the joint sealant.

(1/31/2017)

1. Bore and Jack Culvert Pipe Reinforced Concrete Class IV 30-Inch, Item SPV.0090.002; Class V 42-Inch, Item SPV.0090.003.

**A Description**

This special provision describes furnishing and installing culvert pipe by jacking and boring with or without a casing pipe. The method of installation may be selected, but open-cut will not be allowed.

**B Materials**

Furnish Culvert Pipe Reinforced Concrete (type and size) as shown on the plans, conforming to standard spec 522.

Steel casing shall conform to ASTM A53, Grade B Steel Pipe, 35,000 psi minimum yield, with a minimum wall thickness of 0.469 inches. Casing shall be a minimum of 4 inches larger than the outside diameter of the carrier pipe.

If casing is used, annular space shall be filled with lean concrete proportioned of 1-1/2 bags of Portland cement, 6 cubic feet of concrete sand, and 12 cubic feet of coarse aggregate, or one bag Portland cement and 12 cubic feet of graded aggregate.

**C Construction**

Establish reference point and bench marks required to control jacking of casing pipe to elevations indicated on drawings.

Excavate access pit, shaft or approach tunnel according to standard spec 206.

If a casing pipe is used, weld joints with a continuous circumferential weld. Contractor shall be responsible for providing stress transfer across joints capable of resisting jacking forces applied.

Pipe shall be attached to concrete brick supports to be used as a carrier for insertion into casing. Support and brace pipe to prevent shifting or flotation during filler material placement.

Carrier pipe or casing pipe shall be jacked and bored by selected method to line and grade indicated on drawings.

Upon completion of installation of pipe, completely fill annular space between carrier pipe and pipe casing with lean concrete. Fill ends of casing pipe with a minimum 1-foot thick bulkhead.

Backfill casing pipe ends according to standard spec 206 and restore surface.

Demonstrate to satisfaction of the department that the entire length of the casing has been backfilled.

**D Measurement**

The department will measure Bore and Jack Culvert Pipe (type and size) by the linear foot based on the “limits of payment” denoted in plan detail drawing, acceptably completed.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0090.002 | Bore and Jack Culvert Pipe Reinforced Concrete Class IV 30-Inch | LF |
| SPV.0090.003 | Bore and Jack Culvert Pipe Reinforced Concrete Class V 42-Inch | LF |

Payment is full compensation for providing all materials, including culvert pipe reinforced concrete, steel casing pipe, and connections; for all excavating except rock excavation; for sheeting and shoring; for providing and laying pipe; for sealing joints and making connections to new or existing fixtures; for filling annular space and constructing bulkheads; for backfilling; for providing granular backfill material; for removing sheeting and shoring; and for cleaning out and restoring the worksite.

1. Compost Tube, Item SPV.0090.150.

**A Description**

This special provision describes furnishing and installing compost tubes or wattles as shown on the plans or as directed by the engineer and as hereinafter provided. Compost tube shall consist of cylinders of biodegradable compost encased within biodegradable netting.

**B Materials**

Provide compost that:

1. Is a well-decomposed, stable, weed-free, organic, commercially manufactured material resulting from the biological degradation and transformation of plant or animal-derived materials under controlled conditions designed to promote aerobic decomposition.

2. Is mature with regard to its suitability for serving as an erosion control Best Management Practice (BMP) as defined in the table below.

3. Is stable with regard to oxygen consumption and carbon dioxide generation.

4. Does not contain paint, petroleum products, pesticides or any other chemical residues harmful to animal life or plant growth.

5. Does not possess objectionable odors.

6. Has a moisture content with no visible free water or dust produced when handling the material.

Compost feedstock may include, but is not limited to, yard waste, clean chipped wood, farm crop residue, farm animal manure, or vegetable food waste. Do not use materials that have been treated with chemical preservatives as a compost feedstock or as wood chips.

Test in accordance with the United States Composting Council's “Test Methods for Examining of Composting and Compost (TMECC)”. Provide compost with the United States Composting Council's Seal of Testing Assurance Program (STA) certification and STA product label. The compost producer must be a participant in the United States Composting Council's Seal of Testing Assurance program.

Provide quality control documentation that includes the following:

1. The compost technical data sheet with the feedstock by percentage in the final compost product.

2. A certification that the compost meets federal and state health and safety regulations.

3. A copy of the producer's STA certification.

4. A certified report of tests performed by an STA-certified lab, verifying that the compost meets the requirements in the table below.

Compost must comply with the following:

|  |  |  |
| --- | --- | --- |
| PROPERTY | TEST METHOD | REQUIREMENT |
| Particle Size | \*TMECC 02.02-B  Sample Sieving for Aggregate Size Classification  % Dry Weight Basis | 100% Passing, 3 inch  90 – 100% Passing, 1 inch  70 – 100% Passing, ¾ in  30 – 75% Passing, ¼ inch  Maximum length 6 inches |
| pH | TMECC 04.11-A  Elastometric pH 1:5 Slurry Method pH Units | 6.0-8.0 |
| Soluble Salts | TMECC 04.10-A  Electrical Conductivity 1:5 Slurry Method  dS/m (mmhoscm) | Below 5.0 |
| Moisture Content | TMECC 03.09-A  Total Solids & Moisture at 70+/- 5 deg C  % Wet Weight Basis | 35 – 50 |
| Organic Matter Content | TMECC 05.07-A  Loss-On-Ignition Organic Matter Method (LOI)  % Dry Weight Basis | Minimum 40%  Max 60% ash content |
| Maturity | TMECC 05.05-A  Germination and Vigor "Germination and Root Elongation"  Seed Emergence  Seedling Vigor  % Relative to Positive Control | 80 or Above |
| Physical Contaminants | TMECC 02.02-C  Man Made Inert Removal and Classification:  Plastic, Glass and Metal  %>4mm fraction, dry mass (weight) basis | Less than 1% |
| Pathogens | Shall meet Class A requirements for pathogens as specified in NR 204.07(6)(a) | Pass |
| Chemical Contaminants | Shall meet pollutant concentrations as specified in NR 204.07(5)(c) | Pass |
| Carbon to Nitrogen Ratio | C:N | 10:1 – 20:1 |

\* TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the United States Compost Council (USCC).

Immediately remove from the project, compost not conforming to the above requirements or taken from a source other than those tested, and replace the compost at no cost to the Department.

The Engineer reserves the right to sample compost at the jobsite.

Compost tube shall be a minimum of 5 inches in diameter. Netting material shall be clean, evenly woven, and free of encrusted concrete or other contaminating materials such as preservatives. Netting material shall be free from cuts, tears, or weak places and shall have a minimum lifespan of 6 months and a maximum lifespan of not more than 24 months.

Wood stakes used in securing Compost Tube shall be made from untreated Douglas fir, hemlock, or pine species. Wood stakes shall be 2-inch by 2-inch nominal dimension and 36 inches in length. Install/locate wood stakes per manufacturer’s recommendations.

**C Construction**

Compost tube shall be installed as soon as construction will allow or when designated by the Engineer. Compost tube installation and trenching shall begin from the base of the slope and work uphill prior to any topsoil or compost placement. Trenches shall, at all times, be perpendicular to the direction of flow down the slope. Excavated material from trenching shall be spread evenly along the uphill slope and be compacted using hand tamping or other method approved by the Engineer. On gradually sloped or clay-type soils trenches shall be 2 to 3 inches deep. On loose soils or on steep slopes, trenches shall be 3 to 5 inches deep, or half the thickness of the Compost tube, whichever is greater.

The contractor shall exercise care when installing wattles to ensure the method of installation minimizes the disturbance of waterways and prevents sediment or pollutant discharge into water bodies.

**C.1 Maintenance**

Maintain Compost tube until the project has been completed or directed otherwise. Routinely inspect Compost tube for any material dislodgement. Replace and redress any dislodged material.

**D Measurement**

The department will measure Compost Tube by the linear foot of tube acceptably installed.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0090.150 | Compost Tube | LF |

Payment is full compensation for furnishing and installing Compost Tube as shown in the plans or as directed by the engineer; including the required trenching and subsequent spreading of trenched material after the embankment is stabilized; and the furnishing and installing of wood stakes to secure Compost Tube.

(9/6/2016)

1. Traffic Control Gawk Screen Furnished, Item SPV.0090.201; Traffic Control Gawk Screen Installed, Item SPV.0090.202.

**A Description**

This special provision describes furnishing and installing traffic control gawk screen on concrete barrier as a traffic control device and removal upon completion of the project.

**B Materials**

Furnish rectangular shaped screen for temporary mounting on top of concrete barrier.

Furnish a polymer, polyethylene, or UV protected thermoplastic, or similar lightweight product that will not shatter when impacted and is proven crashworthy.

Submit shop drawings a minimum of 2 weeks prior to the proposed use of Traffic Control Gawk Screen.

Requirements:

* 24 inches in height.
* The same length as the concrete barrier on which it will be mounted, without splicing, except account for longitudinal overhang between the concrete barrier as shown in the plans.
* Mounted with 2 poles, at the spacing shown in the plan, attached to the mounting plate with the mounting plate drilled into the top of the concrete barrier.
* Secured with a chain and pin, or other approved method, to the mounting pole.
* Capable of being securely connected to the adjacent screen section using polyethylene brackets, or similar approved fasteners, made of non-metallic materials.
* Capable of expanding without buckling.
* Capable of contracting without creating gaps in the screening and while remaining securely fastened to the adjacent screen.
* Gray in color and opaque.
* Has finished faces on both sides of the screen.
* Capable of remaining in place from traffic gusts, wind gusts, and other outdoor elements that may move or displace the screen.

Furnish and install mounting pipe and hardware according to manufacturer/supplier directions.

Installations and removals of the gawk screen to/from its supports on the jobsite shall not require any tools.

**C Construction**

Furnish and deliver traffic control gawk screen to worksites within the project. Install the screen according to manufacturer’s recommendations at contract-identified locations or as the engineer directs. Fasten screen sections together.

Provide surveillance and maintenance as specified in standard spec 643.3.2. Repair or replace any portion of the screen that is damaged as directed by the engineer at no additional cost. Replace any screen sections that buckle, deform, shrink, or have any other material or installation failure, as determined by the engineer, at no additional cost.

Remove screen when no longer needed at the installation site, during winter when directed by the engineer, and upon project completion. In permanent concrete barrier, concrete parapet, and department owned temporary concrete barrier, remove mounting hardware to below the concrete surface. Encapsulate all exposed metal and fill all holes left by anchorage methods with an epoxy from the department’s approved products list. Fill holes as the screen is removed.

**D Measurement**

The department will measure Traffic Control Gawk Screen Furnished by the linear foot, acceptably delivered to the project site.

The department will measure Traffic Control Gawk Screen Installed by the linear foot, acceptably completed, measured along the base of the screen after installation for each contract-identified or engineer-directed initial installation. The department will also measure subsequent contract-identified or engineer-directed reinstallations. The department will not measure installations made solely to accommodate the contactor’s means and methods.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0090.201 | Traffic Control Gawk Screen Furnished | LF |
| SPV.0090.202 | Traffic Control Gawk Screen Installed | LF |

Payment for Traffic Control Gawk Screen Furnished is full compensation for furnishing traffic control screen, mounting posts, and mounting and fastening hardware; initial delivery; and storage until installation.

Payment for Traffic Control Gawk Screen Installed is full compensation for each installation; moving/trucking to another worksite within the project, unloading, and reinstalling; screen surveillance, maintenance, repair, and replacement; removing; disposal; and concrete barrier repair due to screen installation and after screen removal.

(5/31/2016)

1. Concrete Pavement Joint Layout Project 1007-12-78, Item SPV.0105.001.

**A Description**

This special provision describes designing the joint layout and staking the location of all joints on the project, including mainline, ramps and intersections (traditional and roundabouts) to accommodate the concrete paving operation.

**B (Vacant)**

**C Construction**

Design the joint layout and stake the location of all joints on the project, including mainline, ramps and intersections (traditional and roundabouts), to accommodate the concrete paving operation. Plan and set all points necessary to establish the horizontal position of the transverse and longitudinal joints in the concrete pavement according to the plans, the American Concrete Pavement Association Intersection Joint Layout Guidelines, and as directed by the engineer. Establish the joint layout in a manner to best fit field conditions, construction staging, the plan, and as directed by the engineer.

**D Measurement**

The department will measure Concrete Pavement Joint Layout Project 1007-12-78 as a single lump sum unit, acceptably completed.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0105.001 | Concrete Pavement Joint Layout Project 1007-12-78 | LS |

Payment is full compensation for designing the joint layout on the mainline, ramps and all traditional and roundabout intersections; for completing all surveying work necessary to locate all transverse and longitudinal joints; and for making adjustments to match field conditions and construction staging.

1. Survey Project 1007-12-78 with Optional AMG for Concrete Pavement and Base Course, Item SPV.0105.002.

**A Description**

Standard specs 105.6 and 650 are modified to define the requirements for construction staking for this contract.

*Add the following to standard spec 105.6.1:*

Horizontal and vertical control points, provided by the department, are generally at 1 mile intervals for horizontal control and at ½ mile intervals for vertical control. Control points will be provided in a hard copy and ASCII electronic format.

*Replace standard spec 105.6.2 with the following:*

The department will not perform any construction staking for this contract. The contractor shall perform all survey required to layout and construct the work under this contract, subject to engineer’s approval.

The survey includes establishing horizontal and vertical position for all aspects of construction including but not limited to storm sewer, subgrade, base, curb, gutter, curb and gutter, pipe culverts, structure layout, pavement, barriers (temporary and permanent), electrical installations, supplemental control, slope stakes, ponds, ITS, FTMS, ramp gates, parking lots, utilities, landscaping elements, irrigation system layout, installation of community sensitive design elements, traffic control items, fencing, etc.

The department may choose to perform quality assurance survey during construction. This quality assurance survey does not relieve the contractor of the responsibility for furnishing all survey work required under this contract.

*Delete standard spec 650.1.*

**B (Vacant)**

**C Construction**

Survey required under this item shall be in accordance to all pertinent requirements of standard spec 650 and shall include all other miscellaneous survey required to layout and construct all work under this contract.

*Replace standard spec 650.3.8 with the following:*

**650.3.8 Concrete Pavement**

**650.3.8.1 General**

(1) Under the Construction Staking Concrete Pavement bid item the contractor may substitute automated machine guidance (AMG) for conventional staking on all or part of the concrete pavement and underlying base. The engineer may require the contractor to revert to conventional staking methods for all or part of the work at any point during construction if, in the engineer's opinion, AMG is producing unacceptable results.

**650.3.8.2 Conventional Concrete Pavement Staking**

(1) Set construction stakes or marks at 25-foot intervals. Set and maintain additional stakes as necessary to establish location and grade along intersecting road radii; and for auxiliary lanes, vertical curves, horizontal curves, and curve transitions according to the plans. Locate stakes to within 0.02 feet horizontally and establish elevations to within 0.01 feet vertically. Set and maintain sufficient additional stakes at each cross-section to achieve the required accuracy and to support the method of operations.

**650.3.8.3 Automated Machine Guidance for Concrete Pavement**

**650.3.8.3.1 General**

(1) No base or paving stakes or stringlines are required for AMG work.

(2)Coordinate with the engineer throughout the course of construction to ensure that work performed using AMG conforms to the contract tolerances and that the methods employed conform to the contractor's AMG work plan and accepted industry standards. Address AMG issues at weekly progress meetings.

(3)Use a total station to provide station, offset, and elevations at locations specified in 650.3.8.3.5 and at additional engineer-directed locations after fine grading the base and after placing the concrete pavement. Allow the engineer access to view current display data on the contractor’s AMG equipment during paving and fine grading operations.

(4)Provide the department field staff up to 8 hours of formal training on contractor's AMG systems.

**650.3.8.3.2 AMG Work Plan**

(1) Submit a comprehensive written AMG work plan for department review at least 5 business days before beginning AMG work. The engineer will review the plan to determine if it conforms to the requirements of this special provision.

(2) Construct the base and concrete pavement as the contractor's AMG work plan provides. Update the plan as necessary during construction.

(3) The AMG work plan should discuss how AMG technology will be integrated into other technologies employed on the project. Include, but do not limit the contents to, the following:

1. Designate which portions of the contract will be done using AMG and which portions will be done using conventional staking.

2. Describe the manufacturer, model, and software version of the AMG equipment including the angular accuracy and the measurement frequency of the guidance system.

3. Provide information on the qualifications of contractor staff. Include formal training and field experience. Designate a single staff person as the primary contact for AMG technology issues. This person shall be on site during all AMG concrete placement.

4. Describe how project control is to be established. Include a list and map or kml file showing 3D control points enveloping the site. Incorporate department-provided primary control and contractor-provided secondary control into a single site control network. At a minimum provide sufficient 3D control to utilize not less than 3 control points in each total station setup, be it within a resection or as a setup point, backsight, and third point for an independent check. Use engineer-approved survey markers and/or targets. Ensure that secondary control points are accurate to within 0.02 feet horizontally and to within 0.01 feet vertically.

5. Describe total station setup procedures including methods used to set and relocate total stations for each day’s paving. Record or note the residual error in any resection calculation. Take and record check shots on 3D control points at varying distances from the instrument that represent the varying distances used in guiding the paving machine. Submit notes or digital reports of setup data and control-point checks daily.

6. Describe the contractor's quality control procedures. Describe procedures for checking, mechanical calibration, and maintenance of equipment. Include the frequency and type of checks performed to ensure that the trimmed base and concrete pavement conform to the contract plans.

**650.3.8.3.3 Equipment**

(1) Use robotic total stations machine guidance or other engineer approved combination of methodologies to meet the contract requirements.

(2) Perform periodic sensor and/or pan calibrations and other routine adjustments as required to ensure that the trimmed base and concrete pavement conform to the contract plans.

**650.3.8.3.4 Geometric and Surface Information**

**650.3.8.3.4.1 Department Responsibilities**

(1) The department will provide electronic design data in the contractor data packet. See the Contractor Data Packet contract special provision for a list of design data content.

**650.3.8.3.4.2 Contractor Responsibilities**

(1) Obtain elevations of adjacent pavement and bridges at centerline, edge of pavement, and other locations necessary to characterize existing profile and cross slope. Adjust design profile grade and cross slope to provide a smooth transition from the new pavement to the existing pavement or bridge. Notify the engineer when a smooth profile cannot be provided. Submit final adjusted plan elevations to the engineer.

(2) Review department-provided design model data for areas of the project employing AMG. Report inconsistencies between that data and the contract plans to the engineer and work with the engineer to resolve those inconsistencies. Use the resulting revised design model data and matching as-built surface data from above item (1) to develop a contractor construction model.

(3) Provide the resulting construction model data proposed for the paving operation to the department in LandXML v1.2 or AutoCAD DWG.

**650.3.8.3.4.3 Managing and Updating Information**

(1) Notify the department of any errors or discrepancies in department-provided information. The department will determine what revisions may be required. The department will revise the contract plans, if necessary, to address errors or discrepancies that the contractor identifies. The department will provide the best available information related to those contract plan revisions.

(2) Revise the construction model as required to support construction operations and to reflect any contract plan revisions the department makes. Perform checks to confirm that the revised construction model agrees with the contract plan revisions. Provide a copy of the resulting adjusted construction model data to the engineer in LandXML v1.2 or AutoCAD DWG. The department will pay for costs incurred to incorporate contract plan revisions as extra work.

**650.3.8.3.5 Construction Checks**

**650.3.8.3.5.1 Final Base Checks**

(1) Check the trimmed base against the final adjusted plan elevation at randomly selected points on cross sections located at stations evenly divisible by 100. Conduct at least one random check per 250 lane-feet corresponding to the basic units used to assess pavement thickness under standard spec 415.3.16. Also, check the trimmed base at additional points as the engineer directs. Notify the engineer at least 2 business days before making final checks so the engineer can observe the process.

(2) Ensure that no individual check is off by more than 0.02-foot vertically of the final adjusted plan elevation. Notify the engineer if this criterion is exceeded.

(3) The department may conduct periodic independent base checks. The department will notify the contractor if any individual check differs by more than 0.02-foot vertically from the final adjusted plan elevation.

**650.3.8.3.5.2 Final Pavement Checks**

(1) Check the finished concrete immediately after placement against the accepted plan elevation at randomly selected points on cross sections. Conduct at least one random check per 250 lane-feet corresponding to the basic units used to assess pavement thickness under standard spec 415.3.16. Also, check the pavement at drainage structures, bridges, driveways, intersections, ramp termini, and additional points as the engineer directs. Notify the engineer before making final checks so the engineer can observe the process.

(2) Notify the engineer immediately if the final pavement surface does not match the final adjusted plan elevation within 0.02-foot vertically.

(3) The department may conduct periodic independent pavement elevation checks. The department will notify the contractor if any individual check differs by more than 0.05-foot horizontally or 0.02-foot vertically from the final adjusted plan elevation.

**D Measurement**

The department will measure Survey Project 1007-12-78 with Optional AMG for Concrete Pavement and Base Course each as a single lump sum unit acceptably completed.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0105.002 | Survey Project 1007-12-78 with Optional AMG for Concrete Pavement and Base Course | LS |

Payment is full compensation for performing all survey work required to layout and construct all work under this contract.

(2/14/2018)

1. Stormwater Treatment Filter Strip, Item SPV.0165.150.

**A Description**

This special provision describes the construction of Stormwater Treatment Filter Strip per the plan detail, as directed by the engineer, and as hereinafter provided.

**B Materials**

Sand shall be poorly graded with less than 5% fines (USCS classification SP) and as defined in the following table.

|  |  |
| --- | --- |
| **Sieve** | **Maximum Percent Passing** |
| No. 4 | 100% |
| No. 10 | 90% |
| No. 40 | 10% |
| No. 200 | 5% |

**C Construction**

Undercut or underfill all areas designated for filter strips to a degree that if covered with the specified depth of sand and topsoil, the finished work conforms to the required lines, grades, slopes, and cross sections the plans and drawings show. Place sand to the depth equal to 30% of the total subsoiled depth, then place topsoil to the minimum depth required in the contract. Use tracked equipment with a track pressure no greater than 4.5 psi. The subsoiled filterstrip limits on the embankment should begin 2 feet from the swale flow line, can extend no more than 5 vertical feet towards the highway, and end no closer than 10 feet from the subgrade shoulder point.

Subsoiling is the practice of dragging tines, shanks or claws through soil to a depth of approximately 20 inches to loosen and mix the soil layers. Subsoil the filter strip areas after topsoil placement. Schedule a 50-foot long test section and demonstrate competence to the engineer prior to continuing operations. The engineer shall identify the test area. Subsoiling shall consist of two operations: deep tilling passes and a surface mixing pass. For the deep tilling passes, loosen subsoiled areas to a depth of 20 inches of the in‑place material and placed topsoil or compost. For the surface mixing pass, loosen the subsoiled areas to a depth of 6 to 8 inches. After obtaining approval by the engineer that the equipment and methods are sufficient to obtain the desired results, complete the subsoiling operation. Subsoiling done without the engineer’s approval will be considered as unauthorized work.

For the deep tilling passes, create subsoiling channels with a commercially available, multi‑shanked implement attached to track‑type equipment. There shall be a minimum of two shanks on the equipment, with each shank located behind a track so that the soil is loosened after it is tracked. Do not pull the shanks through previous channels, but instead create multiple channels. Work at right angles to the direction of surface drainage. The equipment shall be capable of exerting a penetration force necessary for the site. No disc cultivators, chisel plows, or spring‑loaded equipment will be allowed. Space the grid channels 24 to 30 inches apart, depending on equipment, site conditions, and the plan. The channel depth shall be to a minimum of 20 inches. If soils are saturated, delay operations until the soil moisture is at field capacity or less. Field capacity is the amount of water retained in the soil after it has been saturated and allowed to drain freely.

For the surface mixing pass, use a disk chisel or coulter chisel plow with twisted points, or other approved implement, to mix the top 6 to 8 inches of the soil. Do the operation in one pass with a commercially available implement attached to track‑type equipment applying no more than 5 psi of pressure or to a tractor with a minimum of two tires per axle. The equipment shall be capable of exerting a penetration force necessary for the site.

**C.1 Exceptions**

Area exceptions to subsoiled filter strips include areas within the drip line of any existing trees, over utility installations within 30 inches of the surface, when trenching/drainage lines are installed, where compaction is by design (abutments, footings or inslopes steeper than 4:1), and inaccessible slopes, as approved by the engineer. In cases where exceptions occur, observe a minimum setback as directed by the engineer.

**C.2 Finish Grading**

Upon completion and acceptance of the subsoiled area, finish grade surface as described in sections 625.3.3 (2) and (4), except that only light-weight equipment, as approved by the engineer, may be used to break down clods and lumps. Drive no other equipment over the subsoiled area after the filter strip is finish-graded. Any filter strip areas that become compacted due to the contractors operations, must be subsoiled and finish-graded at no expense to the department.

Seed, fertilize, and mulch the filter strip immediately after final grading. Place safety fence on the upgradient side of the filter strip, offset by 1 foot away from the filter strip immediately after seeding and mulching. Remove the safety fence only after all construction activities in the general area of the filter strip have been completed.

**D Measurement**

The department will measure Stormwater Treatment Filter Strips by the square foot acceptably completed.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0165.150 | Stormwater Treatment Filter Strips | SF |

Payment is full compensation for constructing the filter strip including furnishing and placing the sand; for subsoiling; and for furnishing all labor, tools, equipment, materials, and incidentals necessary to complete the work. The department will pay for safety fence under the Fence Safety bid item.

1. Longitudinal Grooving Bridge Deck, Item SPV.0165.700.

**A Description**

This special provision describes providing longitudinal deck grooves parallel to the centerline of the roadway prior to opening the bridge to traffic as directed by the engineer.

**B Materials**

Use a grooving machine containing blades mounted on a multi-blade arbor on a self‑propelled machine built for grooving hardened concrete surfaces.

Use a grooving machine with a depth control device that detects variations in the deck surface and adjusts the cutting head height to maintain a specified depth of groove.

Equip the grooving machine with a guide device to control multi-pass alignment.

**C Construction**

Groove the pavement longitudinally without damaging the concrete deck surface.

Complete a longitudinal grooving operation that results in a uniformly grooved deck surface.

Cut grooves continuously across the deck width to within 18 inches of the barrier rail, curb line, or median divider. If metal floor drains extend more than 18 inches from the barrier rail, curb line, or median divider, all grooves on the bridge deck surface are to end within 6 inches of the floor drain perimeter.

At skewed metal edged expansion joints in the bridge deck surface, end all grooves on the bridge deck surface within 6 inches of the joint leaving no ungrooved surface adjacent to each side of the joint greater than 6 inches in width on the deck side of the expansion joints.

Produce grooves that are continuous across construction joints or other joints in the concrete deck surface less than ½-inch wide.

Construct longitudinal grooves with the following criteria:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Width  (In) | Depth  (In) | Spacing  C-C  (In) | Width Tolerance  (In) | Depth Tolerance  (In) | Spacing Tolerance  (In) |
| 1/8 | 3/16 | 3/4 | 0 to 1/16 | ± 1/16 | ± 1/16 |

Collect, remove and dispose of solid material residue and liquid waste resulting from grooving operations by vacuuming in a manner satisfactory to the engineer.

**D Measurement**

The department will measure Longitudinal Grooving Bridge Deck by the square foot of area acceptably completed.

**E Payment**

The department will pay for plan quantities according to standard spec 109.1.1.2 at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0165.700 | Longitudinal Grooving Bridge Deck | SF |

Payment is full compensation for providing the required machinery and operators; for grooving, for collecting, removing and properly disposing of all waste materials.

(1/5/2017)

1. Wall Concrete Panel Mechanical Stabilized Earth R-13-348, Item SPV.0165.704; R-13-349, Item SPV.0165.705; R-13-350, Item SPV.0165.706; R-13-351, Item SPV.0165.707; R-13-352, Item SPV.0165.708; R-13-334, Item SPV.0165.709

**A Description**

This special provision describes designing, furnishing materials and erecting a permanent earth retention system in accordance to the lines, dimension, elevations and details as shown on the plans and provided in the contract. The design life of the wall and all wall components shall be 75 years minimum.

This specialprovisiondescribes the quality management program (QMP) for Mechanically Stabilized Earth (MSE) walls. A quality management program is defined as all activities, including process control, inspection, sampling and testing, and necessary adjustments in the process that are related to the construction of the MSE wall, which meets all the requirements of this provision.

This special provision describes contractor quality control (QC) sampling and testing for backfill density testing, documenting those results, and documenting related production and placement process changes. This special provision also describes department quality verification (QV), independent assurance (IA), and dispute resolution.

Chapter 8 of the department’s construction and materials manual (CMM) provides additional detailed guidance for QMP work and describes sampling and testing procedures.

**B Materials**

**B.1 Proprietary Wall Systems**

The supplied wall system must be from the department’s approved list of Concrete Panel Mechanically Stabilized Earth Wall systems. Proprietary wall systems must conform to the requirements of this specification and be pre-approved for use by the department’s Bureau of Structures. The department maintains a list of pre-approved proprietary wall systems. The name of the pre-approved proprietary wall system selected shall be furnished to the engineer within 25 days after the award of contract.

To be eligible for use on this project, a system must have been pre-approved by the Bureau of Structures and added to that list prior to the bid opening date. To receive pre-approval, the retaining wall system must comply with all pertinent requirements of this provision and be prepared in accordance to the requirements of Chapter 14 of the department’s LRFD Bridge Manual. Information and assistance with the pre-approval process can be obtained by contacting the Bureau of Structures, Structures Maintenance Section at the following email address: [DOTDLStructuresFabrication@dot.wi.gov](mailto:name.lastname@dot.wi.gov).

**B.2 Design Requirements**

It is the responsibility of the contractor to submit a design and supporting documentation as required by this special provision, for review and acceptance by the department, to show the proposed wall design is in compliance with the design specifications. The submittal shall include the following items for review: detailed plans and shop drawings, complete design calculations, explanatory notes, supporting materials, and specifications. The detailed plans and shop drawings shall include all details, dimensions, quantities and cross-sections necessary to construct the walls. Submit shop drawings to the engineer conforming to 105.2 with electronic submittal to the fabrication library under 105.2.2. Certify that shop drawings conform to quality control standards by submitting department form [DT2329](http://wisconsindot.gov/Documents/formdocs/dt2329.docx) with each set of shop drawings. Department review does not relieve the contractor from responsibility for errors or omissions on shop drawings. Submit no later than 60 days from the date of notification to proceed with the project and a minimum of 30 days prior to the date proposed to begin wall construction.

The plans and shop drawings shall be prepared on reproducible sheets 11 inch x 17 inch, including borders. Each sheet shall have a title block in the lower right corner. The title block shall include the WisDOT project identification number and structure number. Design calculations and notes shall be on 8 ½ inch x 11 inch sheets, and shall contain the project identification number, name or designation of the wall, date of preparation, initials of designer and checker, and page number at the top of the page. All plans, shop drawings, and calculations shall be signed, sealed and dated by a professional engineer licensed in the State of Wisconsin.

The design of the wall shall be in compliance with the current American Association of State Highway and Transportation Officials LRFD (AASHTO LRFD) Bridge Design Specifications with latest interim specifications for Mechanically Stabilized Earth Walls, WisDOT’s current Standard Specifications for Highway and Structure Construction (standard spec), Chapter 14 of the WisDOT LRFD Bridge Manual and standard engineering design procedures as determined by the Department. Loads, load combinations, load and resistance factors shall be as specified in AASHTO LRFD Section 11. The associated resistance factors shall be defined in accordance with Table 11.5.7-1 in AASHTO LRFD.

Design and construct the walls in accordance to the lines, grades, heights and dimensions shown on the plans, as herein specified, and as directed by the engineer. Where walls or wall sections intersect with an included angle of 130 degrees or less, a vertical corner element separate from the standard panel face shall abut and interact with the opposing standard panels. The corner element shall have ground reinforcement connected specifically to that panel and shall be designed to preclude lateral spread of the intersecting panels. If the wall is installed in front of a bridge abutment or wing, it shall also be designed to resist the applied abutment/bridge lateral forces specified on the plans.

Walls parallel to supporting highway traffic shall be designed for the effects of highway surcharge loading equivalent of 2 feet soil surcharge weight or 240 psf. The design shall also consider the traffic barrier impact where applicable. Walls that do not carry highway traffic shall be designed for a live load surcharge of 100 psf in accordance with Chapter 14 of the WisDOT LRFD Bridge Manual or as stated on the plans.

A maximum value of the angle of internal friction of the wall backfill material used for design shall be assumed to be 30 degrees without a certified report of tests. If a certified report of tests yields an angle of internal friction greater than 30 degrees, the larger test value may be used for design, up to a maximum value of 36 degrees.

An external stability check at critical wall stations showing Capacity Demand Ratios (CDR) for sliding, eccentricity, and bearing checks is performed by the department and are provided on the wall plans.

The design of the wall by the contractor shall consider the internal and compound stability of the wall mass in accordance with AASHTO LRFD 11.10.6. The internal stability shall include soil reinforcement pullout, soil reinforcement rupture, and panel-reinforcement connection failure at each soil reinforcement level. The design shall be performed using the Simplified Method or Coherent Gravity Method. Calculations for factored stresses and resistances shall be based upon assumed conditions at the end of the design life. Compound stability shall be computed for the applicable strength limits. Sample analyses and hand calculations shall be submitted to verify the output of any software program used. The design calculations and notes shall clearly indicate the Capacity to Demand Ratios (CDR) for all internal and external stabilities as defined in AASHTO LRFD.

The wall facing shall be designed in accordance with AASHTO LRFD 11.10.2.3. The facing panels shall also be designed to resist compaction stresses that occur during the wall erection. The minimum thickness of the facing panel shall be 5.5 inches. The surface area of a standard single panel cannot exceed 60 square feet. The maximum height of a standard panel shall be 5 feet. The top and bottom panels may exceed 5 foot in height based on site topography subject to the approval by the Structures Design Section. The design of the steel reinforcement within the panels shall be based on one-way bending action. Design the wall panels and joints between panels to accommodate a maximum differential settlement of 1 foot over a 100-foot length, unless the plans indicate other.

The minimum length of soil reinforcement measured from the back face of the wall shall be equal to 0.7 of the wall height, or as shown on the plan. In no case shall this length be less than 8 feet. The soil reinforcement length shall be the same from the bottom to the top of the wall. All soil reinforcement layers shall be connected to facings. The soil reinforcement shall extend a minimum of 3.0 feet beyond the theoretical failure plane in all cases. The maximum vertical spacing of soil reinforcement layers shall be 31 inches. The uppermost layer of the reinforcement shall be located between 6 inches and 18 inches below the bottom of an overlying slab, footing or top of the wall. The upper layers of the soil reinforcement shall also be checked to verify that they have sufficient tensile resistance against traffic barrier impact where applicable.

All soil reinforcement required for the reinforced soil zone shall be connected to the face panels. The reinforcement and the reinforcement/facing connection strength shall be designed to resist maximum factored reinforcement loads in accordance with AASHTO LRFD Section 11.10.6. Facing connection strength shall be defined as the resistance factor times the failure load, or the load at 0.5 inch deformation times 0.9, whichever is less. The nominal long term design strength in steel reinforcement and connections shall be based upon assumed conditions at the end of the design life.

Soil reinforcement shall be prefabricated into single or multiple elements before galvanizing. Soil reinforcement shall be fabricated or designed to avoid piling, drainage structures or other obstacles in the fill without field modifications. Unless approved by the Bureau of Structures cutting or altering of the basic structural section of either the strip or grid at the site is prohibited, a minimum clearance of 3” shall be maintained between any obstruction and reinforcement, and splicing reinforcement is not allowed.

The minimum embedment of the wall shall be 1 foot 6 inches below finished grade, or as given on the plans. All walls shall be provided with a concrete leveling pad. Minimum wall embedment does not include the leveling pad depth. Step the leveling pad to follow the general slope of the ground line. Frost depth shall not be considered in designing the wall for depth of leveling pad.

Wall facing units shall be installed on a concrete leveling pad. The bottom units shall be horizontal and centered on the leveling pad. The minimum thickness of the leveling pad shall be 6-inches. The minimum width of the leveling pad shall be 12-inches.

**B.3 Wall System Components**

Materials furnished for wall system components under this contract shall conform to the requirements of this specification. All documentation related to material and components of the wall systems specified in this subsection shall be submitted to the engineer.

**B.3.1 Wall Facing**

Wall facing shall consist of modular precast concrete face panels produced by a wet cast process, and have cast-in-place concrete pads or footings. The concrete panels shall have a minimum strength of 4000 psi at 28 days. The concrete for the panels shall be air entrained, with an air content of 6% +/- 1.5%. All materials for the concrete mixture for the panels shall meet the requirements of standard spec 501. The panel edges shall be configured so as to conceal the joints. The detail shall be a shiplap, tongue and groove or other detail adequate to prevent vandalism or ultraviolet light damage to the backside of the wall joint covering. Joints between panels shall be no more than 0.75 inch. Use full wall height slip joints at points of differential settlement when detailed on the plan. Horizontal joints must be provided with a compressible bearing material to prevent concrete to concrete contact.

For cast in place concrete cap or coping, use poured concrete Grade A, 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. Provide QMP for cast in place cap and coping concrete as specified in standard spec 716, Class II Concrete.

For concrete leveling pad, use Grade A, 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. Provide QMP for leveling pad concrete as specified in standard spec 716, Class III Concrete.

A minimum of two bearing pads shall be used per panel. The allowable bearing stress shall not exceed 900 psi. The bearing pads shall be preformed EPDM rubber conforming to ASTM D2000, Grade 2, Type A, Class A with a minimum Durometer Hardness of 80, or high- density polyethylene pads with a minimum density of 0.034 lb/in3 in accordancewith ASTM D1505.

An 18-inch wide geotextile shall be used on the backface of the wall panels to cover all panel joints. The geotextile shall meet the physical requirements stated in standard spec 645.2.4 for Geotextile, Type DF, Schedule B, except that the grab tensile strength shall be a minimum of 180 pounds in both the machine and cross-machine directions. The geotextile shall be attached with a standard construction adhesive suitable for use on concrete surfaces and cold temperatures. The adhesive shall be applied to the panels, not to the geotextile.

**B.3.2 Backfill**

Furnish and place backfill for the wall as shown on the plans and as hereinafter provided.

Place backfill in a zone extending horizontally from the back face of the wall facing to 1 foot minimum beyond the end of the reinforcement and extending vertically from the top of the leveling pad to a minimum of 3 inches above the final reinforcement layer.

Use natural sand or a mixture of sand with gravel, crushed gravel or crushed stone. Do not use foundry sand, bottom ash, blast furnace slag, crushed/recycled concrete, crushed/milled asphaltic concrete or other potentially corrosive material.

Provide material conforming to the following gradation requirements as per AASHTO T27.

|  |  |
| --- | --- |
| **Sieve Size** | **% by Weight Passing** |
| 1 inch | 100 |
| No. 40 | 0 - 60 |
| No. 200 | 0 - 15 |

The material shall have a liquid limit not greater than 25, as per AASHTO T89, and a plasticity index not greater than 6, as per AASHTO T90. Provide the percent by weight, passing the #4 sieve.

In addition, backfill material shall meet the following requirements.

|  |  |  |  |
| --- | --- | --- | --- |
| **Test** | **Method** | **Value** | |
| **(Galvanized)** | **(Aluminized Type 2)** |
| pH | AASHTO T-289 | 5.0-10.0 | 5.0 – 9.0 |
| Sulfate content | AASHTO T-290 | 200 ppm max. | |
| Chloride content | AASHTO T-291 | 100 ppm max. | |
| Electrical Resistivity | AASHTO T-288 | 3000 ohm-cm min. | 1500 ohm-cm min. |
| Organic Content | AASHTO T-267 | 1.0% max. | |
| Angle of Internal Friction | AASHTO T-236[1] | 30 degrees min. (At 95.0% of maximum density and optimum moisture, per AASHTO T99, or as modified by C.2.) | |

[1] If the amount of P-4 material is greater than 60%, use AASHTO 236 with a standard-size shear box. Test results of this method may allow the use of larger angles of internal friction, up to the maximum allowed by this specification.

If the amount of P-4 material is less than or equal to 60%, two options are available to determine the angle of internal friction. The first method is to perform a fractured faces count, per ASTM D5821, on the R-4 material. If more than 90% of the material is fractured on one face and more than 50% is fractured on two faces, the material meets the specifications and the angle of internal friction can be assumed to be 30 degrees. The second method allows testing all P-1” material, as per AASHTO T-236, with a large shear box. Test results of this second method may allow the use of larger angles of internal friction, up to the maximum allowed by this specification.

Prior to placement of the backfill, obtain and furnish to the engineer a certified report of test results that the backfill material complies with the requirements of this specification. Specify the method used to determine the angle of internal friction. This certified report of test shall be less than 6 months old. Tests will be performed by a certified independent laboratory. In addition, when backfill characteristics and/or sources change, provide a certified report of tests for the new backfill material. Additional certified report of tests are also required. These additional backfill tests may be completed at the time of material production or material placement, with concurrence of the engineer. If this additional testing is completed at the time of material production, complete testing for every 2000 cubic yards of backfill or portion thereof. If this additional testing is completed at the time of material placement, complete testing for every 2000 cubic yards of backfill, or portion thereof, used per wall. For the additional required testing for every 2000 cubic yards of backfill placement, if the characteristic of the backfill and/or the source has not changed then Angle of Internal Friction tests are not included in the additional required testing. All certified reports of test results shall be less than 6 months old and performed by a certified independent laboratory.

**B.3.3 Soil Reinforcement**

All steel portions of the wall system exposed to earth shall be galvanized. All soil reinforcement and attachment devices shall be carefully inspected to ensure they are true size and free from defects that may impair the strength and durability. Soil reinforcement shall be galvanized or aluminized Type 2. Galvanized soil reinforcement shall be in accordance with AASHTO M 111 or ASTM A641. Aluminized soil reinforcement shall be in accordance with ASTM A463 Aluminized Type 2-100, SS, Grade 50, Class 2. Design of galvanized soil reinforcement shall be in accordance to Section 11.10.6.4.2 of the current AASHTO LRFD Specifications. The design life of steel soil reinforcements shall comply with AASHTO LRFD. Aluminized soil reinforcement shall be limited 16 years of steel protection. Aluminized steel shall only be used on soil reinforcement elements and shall not be used on facing connections or any other steel portion of the wall system. Steel soil reinforcement shall be prefabricated into single or multiple elements before galvanizing.

**C Construction**

**C Construction**

**C.1 Excavation and Backfill**

Excavation and preparation of the foundation for the MSE wall and the leveling pad shall be in accordance to standard spec 206. The volume of excavation covered is limited to the width of the reinforced mass and to the depth of the leveling pad unless shown or noted otherwise on the plan. At the end of each working day, provide good temporary drainage such that the backfill shall not become contaminated with run-off soil or water if it should rain. Do not stockpile or store materials or large equipment within 10 feet of the back of the wall.

Place backfill materials in the areas as indicated on the plans and as detailed in this specification. Backfill lifts shall be no more than 8-inches in depth, after compaction.

Conduct backfilling operations in such a manner as to prevent damage or misalignment of the wall panels, soil reinforcement, or other wall components. At no expense to the department, correct any such damage or misalignment as directed by the engineer. A field representative of the wall supplier shall be available during wall construction to provide technical assistance to the contractor and the engineer.

Place and compact the MSE backfill to the level of the next higher layer of MSE reinforcement before placing the MSE reinforcement or connecting it to the wall facing. Place and compact material beyond the reinforced soil zone to allow for proper compaction of material within the reinforced zone. The MSE reinforcement shall lay horizontally on top of the most recently placed and compacted layer of MSE backfill.

Do not operate tracked or wheeled equipment on the backfill within 3 feet from the back panels. The engineer may order the removal of any large or heavy equipment that may cause damage or misalignment of the panels.

**C.2 Compaction**

Compact all backfill behind the wall as specified in standard spec 207.3.6. Compact the backfill to 95.0% of maximum dry density as determined by AASHTO T-99 (modified to compute densities to the nearest 0.1 pcf).

Ensure adequate moisture is present in the backfill during placement and compaction to prevent segregation and to help achieve compaction.

Compaction of backfill within 3 feet of the back face of the wall should be accomplished using lightweight compaction devices. Use of heavy compaction equipment or vehicles should be avoided within 3 feet of the panels. Do not use sheepsfoot or padfoot rollers within the reinforced soil zone.

A minimum of 3 inches of backfill shall be placed over the MSE reinforcement prior to working above the reinforcement.

**C.3 Wall Components**

**C.3.1 General**

Erect panel facing and other associated elements according to the wall manufacturer’s construction guide. Place and compact the MSE backfill to the level of the next higher layer of MSE reinforcement before placing the MSE reinforcement or connecting it to the wall facing.

The MSE reinforcement shall lay horizontally on the top of the most recently placed and compacted layer of MSE backfill. Bending of MSE reinforcement that result in a kink in the reinforcement shall not be allowed. If skewing of the reinforcement is required due to obstructions in the reinforced fill, the maximum skew angle shall not exceed 15 degrees from the normal position unless a greater angle is shown on the plans. The adequacy of the skewed reinforcement in such a case shall be addressed by supporting calculations.

**C.3.2 Steel Layers**

Place the steel reinforcement full width in one piece as shown on the plans. No splicing will be allowed. Maintain elements in position during backfilling.

**C3.3 Panel Tolerances**

As backfill material is placed behind a panel, maintain the panel in its proper inclined position according to the supplier specifications and as approved by the engineer. The supplier shall specify the back batter so that the final position of the wall is vertical. Vertical tolerances and horizontal alignment tolerances shall not exceed ¾-inch when measured along a 10-foot straight edge. The maximum allowable offset in any panel joint shall be ¾-inch. The overall vertical tolerance of the wall (plumbness from top to bottom) shall not exceed ½-inch per 10 feet of wall height. Erect the precast face panels to ensure that they are located within 1 inch from the contract plan offset at any location to ensure proper wall location at the top of the wall. Provide a ¾-inch joint separation between all adjacent face panels to prevent direct concrete-to-concrete contact. Maintain this gap by the use of bearing pads and/or alignment pins. Failure to meet this tolerance shall cause the engineer to require the contractor to disassemble and re-erect the affected portions of the wall. In addition, imperfect molding, honeycombing, cracking or severe chipping of panels shall be cause of panel rejection.

**C.4 Quality Management Program**

**C.4.1 Quality Control Plan**

Submit a comprehensive written quality control plan to the engineer at or before the pre-construction meeting. Do not perform MSE wall construction work before the engineer reviews and accepts the plan. Construct the project as the plan provides.

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. A summary of the locations and calculated quantities to be tested under this provision.
8. A proposed sequencing plan of wall construction operations and random test locations.

**C.4.2 Quality Control Personnel**

Perform the quality control sampling, testing, and documentation required under this provision using HTCP certified technicians. Have a HTCP Grading Technician I (GRADINGTEC-I); or Assistant Certified Technician, Grading (ACT-GRADING); or Aggregate Technician I (AGGTEC-I); or Assistant Certified Technician, Aggregate (ACT-AGG) present at the each grading site during all wall backfill placement, compaction, and nuclear testing activities. Have a HTCP Nuclear Density Technician I (NUCDENSITYTEC-I) or Assistant Certified Technician, Nuclear Density Gauge Operator (ACT-NUC) perform field density and field moisture content testing.

If an Assistant Certified Technician (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.4.3 Equipment**

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.

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>

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.

Conform to ASTM D6938 and CMM 8-15 for density testing and gauge monitoring methods. Perform nuclear gauge measurements using gamma radiation in the backscatter or direct transmission position. Perform each test for 4 minutes of nuclear gauge count time.

Split each Proctor sample and identify so as to provide comparison with the department's test results. Unless the engineer directs otherwise, retain the QC split samples for 14 calendar days and promptly deliver the department’s split samples to the department.

**C.4.4 Documentation**

(1) Document all observations, inspection records, and process adjustments daily. Submit test results to the department's project materials coordinator on the same day they become available.

(2) Use forms provided in CMM Chapter 8. Note other information in a permanent field record and as a part of process control documentation enumerated in the contractor's quality control plan. Enter QC data and backfill material certified report results into the applicable materials reporting system (MRS) software within 5 business days after results are available.

(3)  Submit final testing records and other documentation to the engineer electronically within 10 business days after all contract-required information becomes available. The engineer may allow submission of scanned copies of hand-written documentation.

**C.4.5 Quality Control (QC) Testing**

Perform compaction testing on the backfill. Conform to CMM 8-15 for testing and gauge monitoring methods. Conduct testing at a minimum frequency of 1 test per 150 cubic yards of backfill, or major portion thereof in each lift. A minimum of one test for every lift is required. Deliver documentation of all compaction testing results to the engineer at the time of testing.

Perform 1 gradation test every 750 cubic yards of fill and one 5-point Proctor test (or as modified in C.2) every 2,250 cubic yards of fill. Provide the region split samples of both within 72 hours of sampling, at the region laboratory. Test sites shall be selected using ASTM Method D3665. Provide Proctor test results to the engineer within 48 hours of sampling. Provide gradation test results to the engineer within 24 hours of sampling.

**C.4.6 Department Testing**

**C.4.6.1 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 2 business days after the department obtains the sample.

**C.4.6.2 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.4.2 for contractor testing personnel for each test result being verified. The department will notify the contractor before sampling so the contractor can observe QV sampling.

(2) The department will conduct QV tests at the minimum frequency of 30% of the required contractor density, Proctor and gradation tests.

(3) The department will locate density tests and gradation samples randomly, at locations independent of the contractor’s QC work. The department will split each Proctor and gradation QV sample, testing half for QV, and retaining the remaining half for 10 business days.

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

(5) The department will assess QV results by comparing to the appropriate specification limits. If QV test results conform to this special provision, the department will take no further action. If density QV test results are nonconforming, the area shall be reworked until the density requirements of this special provision are met. If the gradation test results are nonconforming, standard spec 106.5 will apply. Differing QC and QV nuclear density values of more than 1.5 pcf will be investigated and resolved. QV density tests will be based on the appropriate QC Proctor test results, unless the QV and QC Proctor result difference is greater than 3.0 pcf. Differing QC and QV Proctor values of more than 3.0 pcf will be investigated and resolved.

**C.4.6.3 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. Reviewing required worksheets and control charts.

6. Requesting that testing personnel perform additional sampling and testing.

(2) If the department identifies a deficiency, and after further investigation confirms it, correct that deficiency. If the contractor does not correct or fails to cooperate in resolving identified deficiencies, the engineer may suspend placement until action is taken. Resolve disputes as specified in C.4.6.4.

**C.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 may review the data, examine data reduction and analysis methods, evaluate sampling and testing procedures, and perform additional testing. Use ASTM E 178 to evaluate potential statistically outlying data.

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

(3) If the project personnel cannot resolve a dispute, and the dispute affects payment or could result in incorporating non-conforming product 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.5 Geotechnical Information**

Geotechnical data to be used in the design of the wall is given on the wall plan. After completing wall excavation of the entire reinforced soil zone, notify the department and allow the Regional Soils Engineer two working days to review the foundation.

**D Measurement**

The department will measure Wall Concrete Panel Mechanically Stabilized Earth by the square foot acceptably completed. The department will compute the measured quantity from the theoretical pay limits the contract plans show. The department will make no allowance for wall area constructed above or below the theoretical pay limits. All work beyond the theoretical pay limits is incidental to the cost of work. The department will make no allowance for as-built quantities.

**E Payment**

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

ITEM NUMBER DESCRIPTION UNIT

SPV.0165.704 Wall Concrete Panel Mechanically Stabilized Earth R-13-348 SF

SPV.0165.705 Wall Concrete Panel Mechanically Stabilized Earth R-13-349 SF

SPV.0165.706 Wall Concrete Panel Mechanically Stabilized Earth R-13-350 SF

SPV.0165.707 Wall Concrete Panel Mechanically Stabilized Earth R-13-351 SF

SPV.0165.708 Wall Concrete Panel Mechanically Stabilized Earth R-13-352 SF

SPV.0165.709 Wall Concrete Panel Mechanically Stabilized Earth R-13-334 SF

Payment is full compensation for supplying a design and shop drawings; preparing the site, including all necessary excavation and disposal of materials; supplying all necessary wall components to produce a functional wall system including cap, copings, leveling pad, and leveling pad steps; constructing the retaining system and providing temporary drainage; providing backfill, backfilling, compacting, developing/completing/documenting the quality management program, and performing compaction testing.

The department will pay separately for parapets, traffic barriers, railings, and other items above the wall cap or coping.

SPV.0165.709 (20181207)