

## Special Provisions

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**SPECIAL PROVISIONS**

**1. General.**

Perform the work under this construction contract for Project 1310-04-70, 75<sup>th</sup> Street, Village of Paddock Lake, 256<sup>th</sup> Ave to 236<sup>th</sup> Ave, STH 50, Kenosha 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, 2022 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 (20210113)

**2. Scope of Work.**

The work under this contract shall consist of removals, excavation, base aggregate dense, select crushed material, concrete pavement, HMA pavement, retaining walls, concrete curb & gutter, concrete sidewalk, storm sewer, erosion control, restoration, traffic control, permanent signing, pavement marking, traffic signals, and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.

104-005 (20090901)

**3. Prosecution and Progress.**

This article was written assuming a LET date of May 2022 or August 2022. If the project is advanced to a February 2022 LET the construction staging sequence will need to be revised to accommodate the additional time available in 2022 for construction.

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

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

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

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

Provide plan to engineer to accomplish side road lane and shoulder closures a minimum of 7 days prior to beginning work.

Complete all HMA paving by October 1, 2022 for Stage 1A work.

Complete all HMA paving by October 1, 2023 for all remaining stages.

Complete removing asphaltic surface milling prior to performing base patching.

Maintain an acceptable driving surface within the project limits. Acceptable driving surfaces on State Highways open to traffic include asphaltic surface temporary, HMA pavement, and concrete. 6 inches of compacted and uniform base is an acceptable driving surface for non state highway roadways open to traffic and driveways.

Attend weekly scheduling meetings to discuss near term schedule activities, address any long-term scheduling issues, and discuss any relevant technical issues. Develop a rolling three-week schedule identifying the previous week worked and a two week "look ahead". Provide sufficient detail to include actual and planned activities and all the subcontractors for offsite and construction activities, addressing

all activities including lane closure schedules to be performed and identifying issues requiring engineering action or input. Subcontractors shall be in attendance at the weekly progress meetings if identified on the two week "look ahead".

### **Access During Construction**

Maintain access to properties along the project for local residents, businesses, and emergency vehicles. Access for all driveways shall remain open at all times except when paving concrete pavement, concrete sidewalk, and concrete driveway at local resident driveways. Do not fully close commercial driveways without the approval of the property owner and the engineer. Construct commercial driveways in halves or by closing one access at a time for properties that have multiple driveways. Restore private and commercial entrances to include a crushed aggregate surface within the same working day of entrance removal.

### **Winter Shutdown**

Winter shutdown will commence when all contract work required for the interim completion date of November 15, 2022 has been completed. Do not resume work until April 1, 2023 unless approved by the engineer. Temporary traffic signal work may start prior to March 1, 2023 when approved by the engineer. Provide a start date in writing at least 14 days prior to the planned start of construction in 2023. Upon approval the engineer will issue a notice to proceed within 10 days of the approved start date.

### **Work Restrictions**

Install Stage 2 storm sewer laterals shown in the traffic control plans across open lanes of STH 50 during overnight hours. Backfill and pave trench with asphaltic surface temporary on the same night that the sewer is installed. STH 50 may be closed for a maximum of 8 nights to complete the storm sewer laterals shown in the traffic control plans. Lane Rental Fee Assessment will be applied if more than 8 nights of closures are required or if an overnight closure extends beyond the overnight hours defined in the Traffic article.

When STH 50 is closed Traffic Control Signs PCMS shall be used to direct traffic to use the posted alternate route as shown in the traffic control plans.

### **Work Zone Restrictions**

Pedestrians shall be accommodated during all stages of construction throughout the project. Maintain pedestrian access throughout the project as shown in the traffic control plan. The contractor may propose an alternate plan for handling pedestrian traffic as long as it maintains pedestrian traffic throughout the work zone. Pedestrians shall not cross STH 50 at a non-signalized intersection unless otherwise shown in the traffic control plans. Any modifications to the traffic control plan shall be approved in writing by the engineer before any modifications are made to the traffic control plan.

During Stage 2 construct the STH 50 intersection with CTH F in segments so that intersection remains open to bi-directional traffic at all times.

During Stage 2 construct the High School west driveway and High School east driveway closed to traffic. Alternate the closure of the two driveways so that one driveway remains open at all times.

During Stage 2 construct 244<sup>th</sup> Avenue and 242<sup>nd</sup> Avenue closed to traffic. Alternate the closure so the one of the two roadways remain open at all times.

During Stage 2B close STH 83 south of STH 50 to all traffic for a maximum of 21 days to complete all work on STH 83.

During Stage 3 close the STH 50 median at the STH 50 intersection with STH 83/STH 75 to all traffic for a maximum of 21 calendar days to construct the pavement through the intersection.

During Stage 4B close the STH 50 median at the STH 50 intersection with 246<sup>th</sup> Avenue to all traffic for a maximum of 14 calendar days to construct the pavement through the intersection.

During Stage 4B close the STH 50 median at the STH 50 intersection with 236<sup>th</sup> Avenue to all traffic for a maximum of 14 calendar days to construct the pavement through the intersection.

During Stage 4C construct 250<sup>th</sup> Avenue, 248<sup>th</sup> Avenue, 246<sup>th</sup> Avenue and 243<sup>rd</sup> Avenue closed to traffic. Alternate closure of the roadways so that two roadways remain open at all times.

During Stage 4C construct 74<sup>th</sup> Place in segments so that intersection remains open to local traffic at all times.

During Stage 4C construct 236<sup>th</sup> Avenue closed to all traffic for a maximum of 14 days.

During Stage 6A construct the porkchop island in the southeast corner of the STH 50 & STH 75/83 intersection using a truck detour for a maximum of 14 days.

During Stages 6A and 6B provide a truck detour to construct the porkchop island in the northwest corner of the STH 50 & STH 75/83 intersection using a truck detour for a maximum of 14 calendar days. Work on the northwest porkchop island shall not begin until work on the southeast porkchop island is completed so that pedestrian accommodations can be maintained at the intersection.

### **Enhanced Final Liquidated Damages**

*Replace standard spec 108.11 paragraph (3) as follows:*

The department will assess \$5,000.00 in daily liquidated damages. These liquidated damages reflect the cost of engineering, supervision, and a portion of road user costs.

### **Interim Liquidated Damages**

Complete Stage 1A construction operations on STH 50 to the stage necessary to reopen all through lanes to through traffic prior to 12:01 AM November 15, 2022. Do not reopen until completing the following work: West Crossover, East crossover, removal of all traffic control devices not necessary for winter shutdown.

If the contractor fails to complete the work necessary to reopen all lanes of STH 50 to traffic prior to November 15, 2022, the department will assess the contractor \$500.00 in interim liquidated damages for each calendar day the contract work remains incomplete beyond 12:01 AM on November 15, 2022. 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.

At the beginning of Stage 2B operations, close STH 83 south of STH 50 to through traffic for a maximum of 21 calendar days. Do not reopen until completing the following work: Grading, base aggregate, concrete pavement, HMA Pavement, concrete curb & gutter, and storm sewer.

If the contractor fails to complete the work necessary to reopen STH 83 to traffic within 21 calendar days, the department will assess the contractor \$7,500.00 in interim liquidated damages for each calendar day the contract work remains incomplete beyond 21 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.

At the beginning of Stage 3 operations, close the median at the intersection of STH 50 & STH 75 to traffic for a maximum of 21 calendar days. Do not reopen until completing the following work: Grading, base aggregate, concrete pavement, HMA Pavement, concrete curb & gutter, and storm sewer.

If the contractor fails to complete the work necessary to reopen the STH 50 median at the STH 75 intersection to traffic within 21 calendar days, the department will assess the contractor \$5,000.00 in interim liquidated damages for each calendar day the contract work remains incomplete beyond 21 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.

At the beginning of Stage 4A operations, close STH 75 north of STH 50 to through traffic for a maximum of 21 calendar days. Do not reopen until completing the following work: Grading, base aggregate, concrete pavement, HMA Pavement, concrete curb & gutter, and storm sewer.

If the contractor fails to complete the work necessary to reopen STH 75 to traffic within 21 calendar days, the department will assess the contractor \$7,500.00 in interim liquidated damages for each calendar day the contract work remains incomplete beyond 21 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.

During Stage 4B operations, close the median at the intersection of STH 50 & 246<sup>th</sup> Avenue to traffic for a maximum of 14 calendar days. Do not reopen until completing the following work: Grading, base aggregate, concrete pavement, HMA Pavement, concrete curb & gutter, and storm sewer.

If the contractor fails to complete the work necessary to reopen the STH 50 median at the 246<sup>th</sup> Avenue intersection to traffic within 14 calendar days, the department will assess the contractor \$1,000.00 in interim liquidated damages for each calendar day the contract work remains incomplete beyond 14 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.

During Stage 4B operations, close the median at the intersection of STH 50 & 236<sup>th</sup> Avenue to traffic for a maximum of 14 calendar days. Do not reopen until completing the following work: Grading, base aggregate, concrete pavement, HMA Pavement, concrete curb & gutter, and storm sewer.

If the contractor fails to complete the work necessary to reopen the STH 50 median at the 236<sup>th</sup> Avenue intersection to traffic within 14 calendar days, the department will assess the contractor \$1,000.00 in interim liquidated damages for each calendar day the contract work remains incomplete beyond 14 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.

During Stage 4C operations, close the intersection of STH 50 & 236<sup>th</sup> Avenue to traffic for a maximum of 14 calendar days. Do not reopen until completing the following work: Grading, base aggregate, concrete pavement, HMA Pavement, concrete curb & gutter, and storm sewer.

If the contractor fails to complete the work necessary to reopen the STH 50 & 236<sup>th</sup> Avenue intersection to traffic within 14 calendar days, the department will assess the contractor \$1,000.00 in interim liquidated damages for each calendar day the contract work remains incomplete beyond 14 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.

During Stage 6A operations, prohibit right turns for trucks at the STH 50 & STH 75/83 intersection for the northbound STH 83 to eastbound STH 50 right turn movement for a maximum of 7 calendar days. Do not reopen until completing the following work: Grading, base aggregate, concrete pavement, HMA Pavement, concrete curb & gutter, and storm sewer.

If the contractor fails to complete the work necessary to reopen the northbound STH 83 to eastbound STH 50 right turning movement to traffic within 7 calendar days, the department will assess the contractor \$500.00 in interim liquidated damages for each calendar day the contract work remains incomplete beyond 7 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.

During Stage 6A and Stage 6B operations, prohibit right turns for trucks at the STH 50 & STH 75/83 intersection for the southbound STH 83 to westbound STH 50 right turn movement for a maximum of 14 calendar days. Do not reopen until completing the following work: Grading, base aggregate, concrete pavement, HMA Pavement, concrete curb & gutter, and storm sewer.

If the contractor fails to complete the work necessary to reopen the southbound STH 83 to westbound STH 50 right turning movement to traffic within 14 calendar days, the department will assess the contractor \$500.00 in interim liquidated damages for each calendar day the contract work remains incomplete beyond 14 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.

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.

## **Sequence of Operations**

### Stage 1A

- Temporary crossovers east and west of project limits

### Stage 1B

- Temporary Traffic Signals
- STH 50 temporary widening in median

### Stage 2A

- Construct eastbound STH 50
- Begin construction of STH 83 south of STH 50

### Stage 2B

- Complete construction of eastbound STH 50
- Complete construction of STH 83 south of STH 50

### Stage 3

- Construct STH 50 median at STH 83
- Construct middle crossover

### Stage 4A

- Construct STH 50 westbound lanes at STH 75

- Construct STH 75 north of STH 50

#### Stage 4B

- Begin construction of STH 50 westbound lanes west of STH 75
- Begin construction of STH 50 eastbound left turn lanes
- STH 50 median in two way left turn lane segments
- STH 50 temporary widening in median east of STH 75

#### Stage 4C

- Construct westbound STH 50

#### Stage 5

- Construct STH 50 median segments not constructed in previous stages
- Remove east and west crossovers

#### Stage 6A

- Construct porkchop island in southeast corner of the STH 50 & STH 75/83 intersection

#### Stage 6B

- Construct porkchop island in the northwest corner of the STH 50 & STH 75/83 intersection.
- Remove temporary traffic signals

## **4. Lane Rental Fee Assessment.**

### **A General**

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

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

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

### **B Lane Rental Fee Assessment**

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

- Night time- \$1,000 per lane, per direction of travel, per hour broken into 15-minute increments
- Off Peak- \$1,000 per lane, per direction of travel, per hour broken into 15-minute increments
- On Peak- \$1,000 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.

## 5. Traffic

### General

The work under this contract shall conform to the requirements of standard spec 643, the Wisconsin Manual on Uniform Traffic Control Devices (WMTUCD) and as herein provided.

Accomplish the construction sequence as detailed in the Traffic Control section of the plans and as described herein.

Submit to the engineer for approval a detailed traffic control plan for any changes to the proposed traffic control shown in the plans. Submit the plan 14 days prior to the Pre-Construction Conference, or if after the Pre-Construction conference 14 days prior to the intended use of the revised traffic control.

*Supplement standard spec 643.3.1 with the following:*

STH 50 is an Oversize/Overweight (OSOW) route. All fixed message and width restricted signs must be in place prior to the beginning of the width restricted stage to inform multi trip permit holders to utilize alternate routes. See Wisconsin Lane Closure System Advance Notification article to address lane restrictions in LCS.

Provide the Kenosha County Sheriff's Department, the Wisconsin State Patrol, Village of Salem Lakes Fire and Rescue, and the project engineer a current telephone number with which the contractor or his representative can be contacted during non-working hours in the event a safety hazard develops.

Notify Westosha Central High School of all traffic control changes and roadway closures at least 7 calendar days prior to traffic control change so that school bus routes can be modified.

Do not permit construction or personnel equipment or vehicles to directly cross the live traffic lanes of STH 50, STH 75, or STH 83. Yield to all through traffic at all locations. Equip all vehicles or equipment operating in the live traffic lanes with a hazard identification beam (flashing yellow signal light) that is visible from 360 degrees. Operate the flashing yellow beam only when merging or exiting live traffic lanes or when parked or operating on shoulders, except when parked behind barrier wall.

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

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

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

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

### Work Restrictions

Maintain one through lane of traffic in each direction along STH 50 at all times unless otherwise shown in the traffic control plans.

Maintain access to all business driveways unless otherwise shown to be closed in the Traffic Control Plans.

All work zone clear zones and drop offs shall be in accordance with Section 104.6.1.2.3 of the Standard Specs.

Do not park or store materials within 8 feet of the traveled way or a turn lane open to traffic during non-work hours.

Install Stage 2 storm sewer laterals shown in the traffic control plans across open lanes of STH 50 during overnight hours. Backfill and pave trench with asphaltic surface temporary on the same night that the sewer is installed. STH 50 may be closed for a maximum of 8 nights to complete the storm sewer laterals shown in the traffic control plans. Lane Rental Fee Assessment will be applied if more than 8 nights of closures are required or if an overnight closure extends beyond the overnight hours defined in the Traffic article.

### Work Hour Definitions

#### Peak Hours:

- 6:00 AM to 8:00 AM Monday, Tuesday, Wednesday, Thursday, and Friday

- 3:00 PM to 6:00 PM Monday, Tuesday, Wednesday, and Thursday
- 3:00 PM to 9:00 PM Friday

Off Peak Hours:

- 8:00 AM to 3:00 PM Monday, Tuesday, Wednesday, Thursday, and Friday
- 6:00 PM to 9:00 PM Monday, Tuesday, Wednesday, and Thursday
- 7:00 AM to 9 PM Saturday and Sunday
- 7:00 AM to 9:00 PM Sunday

Overnight Hours:

- 9:00 PM Sunday, Monday, Tuesday, Wednesday, and Thursday to 6:00 AM the following day
- 9:00 PM Friday and Saturday to 7:00 AM the following day

**Schedule of Operations**

Stage 1A:

*Vehicles:*

- Maintain single lane in each direction on STH 50

*Pedestrians*

- Sidewalks and crosswalks parallel to STH 50 open at all times

Winter Shutdown

- Roadway returns to preconstruction lane configuration until construction restarts in Spring.

Stage 1B:

*Vehicles:*

- Maintain single lane in each direction on STH 50

*Pedestrians:*

- Sidewalks and crosswalks parallel to STH 50 open at all times

Stage 2A:

*Vehicles:*

- Maintain a single lane in each direction on STH 50
- Maintain a single lane in each direction on STH 75
- Maintain a single lane in each direction on STH 83

*Pedestrians:*

- Sidewalks and crosswalks on the south side of STH 50 parallel to STH 50 closed at all times.
- Sidewalks and crosswalks on the north side of STH 50 parallel to STH 50 open at all times
- Sidewalks on both sides of STH 75 & STH 83 open during stage 2A.

Stage 2B:

*Vehicles:*

- Maintain a single lane in each direction on STH 50
- Maintain a single lane in each direction on STH 75
- STH 83 closed to all traffic and detoured for 21 calendar day duration of stage 2B.

*Pedestrians:*

- Sidewalks and crosswalks on the south side of STH 50 parallel to STH 50 closed at all times.
- Sidewalks and crosswalks on the north side of STH 50 parallel to STH 50 open at all times

- Sidewalks on both sides of STH 75 open at all times
- Sidewalk on west side of STH 83 closed
- Multi use path on east side of STH 83 open to traffic.

### Stage 3:

#### *Vehicles*

- Maintain a single lane in each direction on STH 50
- Maintain a single lane in each direction on STH 75 and STH 83
- Restrict the STH 50 intersection with STH 75 & STH 83 so that the STH 50 median through the intersection is closed and detoured for 21 calendar days. Left turns will be prohibited from STH 50 to STH 75 and STH 83. The STH 75 and STH 83 legs of the intersection will be restricted to a right in/right out only maneuver. A detour will be posted for traffic wanting to make a through movement on the STH 75 & STH 83 legs of the intersection.

#### *Pedestrians:*

- Sidewalks and crosswalks parallel to STH 50 open at all times

### Stage 4A:

#### *Vehicles:*

- Maintain a single lane in each direction on STH 50
- Maintain a single lane in each direction on STH 83
- STH 75 closed and detoured north of STH 50

#### *Pedestrians:*

- Sidewalks and crosswalks on south side of STH 50 parallel to STH 50 open at all times.

### Stage 4B:

#### *Vehicles:*

- Maintain a single lane in each direction on STH 50
- Maintain two through lanes in each direction on STH 75 at STH 50
- Maintain two through lanes in each direction on STH 83 at STH 50

#### *Pedestrians:*

- Sidewalks and crosswalks on south side of STH 50 parallel to STH 50 open at all times.

### Stage 4C:

#### *Vehicles:*

- Maintain a single lane in each direction on STH 50
- Maintain two through lanes in each direction on STH 75 at STH 50
- Maintain two through lanes in each direction on STH 83 at STH 50

#### *Pedestrians:*

- Sidewalks and crosswalks on south side of STH 50 parallel to STH 50 open at all times.
- Alternate construction of roadway and sidewalk on north side of STH 50 between 246<sup>th</sup> Avenue and 74<sup>th</sup> Place as shown in the traffic control plans so that pedestrian accommodations are maintained along STH 50.

### Stage 5:

#### *Vehicles:*

- Maintain a single lane in each direction on STH 50
- Maintain two through lanes in each direction on STH 75 at STH 50
- Maintain two through lanes in each direction on STH 83 at STH 50

*Pedestrians:*

- Sidewalks and crosswalks parallel to STH 50 open at all times

Stage 6A:

*Vehicles:*

- Maintain two through lanes in each direction on STH 50
- Maintain two through lanes in each direction on STH 75 at STH 50
- Maintain two through lanes in each direction on STH 83 at STH 50

*Pedestrians:*

- Sidewalks and crosswalks parallel to STH 50 open at all times

Stage 6B:

*Vehicles:*

- Maintain two through lanes in each direction on STH 50
- Maintain two through lanes in each direction on STH 75 at STH 50
- Maintain two through lanes in each direction on STH 83 at STH 50

*Pedestrians:*

- Sidewalks and crosswalks parallel to STH 50 open at all times

**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**

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

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

**6. Municipality Acceptance of Sanitary Sewer and Water Main Construction.**

Both the department and Village of Paddock Lake personnel will inspect construction of sanitary sewer and water main under this contract. However, construction staking, testing, and acceptance of the sanitary sewer and water main construction will be by the Village of Paddock Lake.

stp-105-001 (20140630)

## 7. Referenced Construction Specifications.

Construct the work enumerated below conforming to the Standard Specifications for Sewer and Water Construction in Wisconsin, most recent edition. If there is a discrepancy or conflict between the referenced specification and the standard specifications regarding contract administration, part 1 of the standard specifications governs.

Conform to the referenced construction specifications for the following:

- Reconstructing Sanitary Manholes
- Adjusting Sanitary Manholes
- Reconstructing Water Valve Boxes
- Adjusting Water Valve Boxes
- Adjusting Water Service Boxes
- Relocating Sanitary Service Line
- Moving Fire Hydrants
- Vertically Extending Fire Hydrants

stp-105-002 (20130615)

## 8. Holiday and Special Event Work Restrictions.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying STH 50, STH 75, and STH 83 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 and special event periods:

- From noon Friday, September 2, 2022 to 6:00 AM Tuesday, September 6, 2022 for Labor Day;
- From 12:01 AM Saturday, September 10, 2022 to 6:00 AM Sunday, September 11, 2022 for Old Settler's Oktoberfest.
- From noon Friday, May 26, 2023 to 6:00 AM Tuesday, May 30, 2023 for Memorial Day.
- From noon Friday, June 30, 2023 to 6:00 AM Wednesday, July 5, 2023 for Independence Day.
- From noon Friday, September 1, 2023 to 6:00 AM Tuesday, September 5, 2023 for Labor Day.
- From 12:01 AM Saturday, September 9, 2022 to 6:00 AM Sunday, September 10, 2022 for Old Settler's Oktoberfest.

stp-107-005 (20210113)

## 9. Utilities.

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

stp-107-065 (20080501)

This contract is using Utility Plans in Section 2 of the plans to indicate the location of existing utility facilities, anticipated utility conflicts, and a resolution to each conflict. Existing utilities and potential conflicts are indicated in color on the utility plan sheets. The limits of the potential conflict and the resolution of the conflict are shown in the tables on the next sheet.

The locations of potential conflicts and resolutions shown in the Utility Plans are approximate. There may be other utility installations in the project area that are not shown. The location of new and relocated facilities are not shown.

Some of the utility work is dependent on work being performed by the contractor at a specific site. Provide the utility at least 14 calendar days' notice in advance of when work will be complete, and the site will be available to the utility.

Coordinate construction activities with a call to Digger's Hotline or direct call to the utilities for the underground facilities in the area, as required by statutes. Use caution to maintain the integrity of underground utilities and maintain OSHA code clearances from overhead facilities at all times.

**AT&T Wisconsin** has underground communications facilities within the project limits. AT&T's work will occur prior to and during construction. A description of conflicts and resolutions is included in the Utility Plan section of the plan set. AT&T Wisconsin's contact is Michael VanBoven, (262) 636-0514, [mv3658@att.com](mailto:mv3658@att.com).

Provide AT&T Wisconsin five (5) calendar days' notice for any facility that needs to be relocated.

**Charter Communications** has aerial and underground communications facilities within the project limits. Charter's work will occur prior to and during construction. A description of conflicts and resolutions is included in the Utility Plan section of the plan set. Charter's contact is Beau Abuya, (414) 758-9241, [beau.abuya@charter.com](mailto:beau.abuya@charter.com).

Charter is requesting that a representative from Charter be present for storm sewer installation in two locations (1006+65, 66' LT and 1011+10, 61' LT). Provide 5 calendar days' notice to Charter Communications before construction of storm sewer at these two locations. Charter Communications will adjust their communications facilities to resolve conflicts between storm sewer and communications facilities at the two storm sewer crossing locations listed above. Contact Gerald Schultz (414) 908-4863 to schedule a representative of Charter Communications to be present at these two storm sewer crossings.

**Frontier** has aerial and underground communications facilities within the project limits. Frontier's work will occur prior to and during construction. A description of conflicts and resolutions is included in the Utility Plan section of the plan set. Frontier's contact is Russ Ryan, (920) 583-3275, [russell.w.ryan@ftr.com](mailto:russell.w.ryan@ftr.com).

**Midwest Fiber Network** has aerial and underground communications facilities within the project limits. Midwest Fiber Network's work will occur prior to and during construction. A description of conflicts and resolutions is included in the Utility Plan section of the plan set. Midwest Fiber Network's contact is Cory Schmuki, (414) 459-3561, [cschmucki@midwestfibernetworks.com](mailto:cschmucki@midwestfibernetworks.com).

**Village of Paddock Lake** has underground sanitary sewer facilities within the project limits. Village of Paddock Lake's sanitary sewer work will occur during construction by the contractor as part of this contract. A description of conflicts and resolutions is included in the Utility Plan section of the plan set. Village of Paddock Lake's contact is Tim Popanda, (262) 843-3617, [tpopanda@paddocklake.net](mailto:tpopanda@paddocklake.net).

Village of Paddock Lake's sanitary sewer work is shown in the plan set and a breakdown of quantities is shown in the miscellaneous quantity sheets.

**Village of Paddock Lake Water** has underground water main facilities within the project limits. Village of Paddock Lake's water main work will occur during construction. Work during construction will be completed by the contractor as part of this contract. A description of conflicts and resolutions is included in the Utility Plan section of the plan set. Village of Paddock Lake's contact is Tim Popanda, (262) 843-3617, [tpopanda@paddocklake.net](mailto:tpopanda@paddocklake.net).

Village of Paddock Lake's water main is shown in the plan set and a breakdown of quantities is shown in the miscellaneous quantity sheets.

**Salem Lakes Utility District** has underground sanitary sewer facilities within the project limits. Salem Lakes Utility District's facilities have all been deemed to not be in conflict and no relocations are required. Salem Utility District's contact is Brad Zautcke, (262) 843-2313, [bzautcke@voslwi.org](mailto:bzautcke@voslwi.org).

**WE Energies Electric** has aerial and underground electric facilities within the project limits. WE Energies Electric's work will occur prior to construction and during construction. A description of conflicts and resolutions is included in the Utility Plan section of the plan set. WE Energies Electric's contact is Andy Doerflinger, (262) 884-6745 [andy.doerflinger@we-energies.com](mailto:andy.doerflinger@we-energies.com).

WE Energies Electric will have proposed power poles in close proximity to the roadway. This may affect the ability for slip form paving depending on the equipment and method of construction used by the contractor. The contractor is encouraged to review WE Energies' work plan and field review as-built locations of poles prior to submitting a bid to determine how the location of the poles will affect the contractors construction operations.

WE Energies Electric will require poles to be braced whenever sewer excavations occur within five feet of a pole. Contact William Dingel (262) 574-3038, [william.dingel@we-energies.com](mailto:william.dingel@we-energies.com), at least 10 days prior to beginning work within 5 feet of a pole.

**WE Energies Gas** has buried gas facilities within the project limits. WE Energies Gas' work will occur prior to construction and during construction. A description of conflicts and resolutions is included in the

Utility Plan section of the plan set. The WE Energies Gas contact is Fulya Kicikoglu, (414) 751-7287, [fulya.kicikoglu@we-energies.com](mailto:fulya.kicikoglu@we-energies.com).

WE Energies will adjust gas valve boxes to final elevation once final grade is established. Provide WE Energies a minimum of 3 working days' notice that final grade is established. Contact WE Energies Dispatch at 1-800-261-5325 to notify WE Energies that gas valves can be adjusted to final elevation.

Abandon gas main will be present within that project limits. If gas facilities are encountered the contractor shall contact WE Energies to confirm that the gas facility has been abandoned and then the contractor shall remove the gas facility.

#### **10. Hauling Restrictions.**

Conduct operations in such a manner that does not impede the free flow of traffic on any roadway open to traffic. Do not haul on local roads without the approval of the appropriate jurisdiction.

#### **11. Information to Bidders, WPDES General Construction Storm Water Discharge Permit.**

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

stp-107-056 (20180628)

#### **12. 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 Neng Yang at (262) 548-8771, [neng.yang@dot.wi.gov](mailto:neng.yang@dot.wi.gov).

stp-107-054 (20210113)

#### **13. Environmental Protection, Aquatic Exotic Species Control.**

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

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

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

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

Use the following inspection and removal procedures:

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

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

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

stp-107-055 (20130615)

## 14. Erosion Control.

*Supplement standard spec 107.20 with the following:*

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

Provide the ECIP 14 days prior to the pre-construction meeting. Provide 1 copy of the ECIP to the department and 1 copy of the ECIP to the WDNR Liaison Craig Webster, (262) 574-2141, [craig.webster@wisconsin.gov](mailto:craig.webster@wisconsin.gov). Do not implement the ECIP without department approval and perform all work conforming to the approved ECIP.

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

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

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

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

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

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

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

(sand, silt, and clay particles) to leave the work site or discharge to a storm water conveyance system without sediment removal treatment.

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

[http://dnr.wi.gov/topic/stormwater/standards/const\\_standards.html](http://dnr.wi.gov/topic/stormwater/standards/const_standards.html).

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

### **Maintaining Drainage**

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

SER-107-003 (20161220)

## **15. Material Stockpile and Equipment Storage**

Submit a map showing all proposed material stockpile and equipment storage locations to the engineer 14 calendar days before either the preconstruction conference or proposed use, whichever comes first. Identify the purpose; length, width & height; and duration of material stockpile or equipment storage at each location. Obtain written permission and necessary permits from the property owner and local governments/agencies and submit two copies to the engineer. Do not stockpile material or store equipment until the engineer approves.

## **16. Health and Safety Requirements for Workers Remediating Petroleum Contamination.**

*Add the following to standard spec 107.1(2):*

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

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

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

stp-107-115 (20150630)

## **17. Coordination with Businesses and Residents.**

The contractor shall arrange and conduct a meeting between the contractor, the department, affected residents, local officials and business people to discuss the project schedule of operations including vehicular and pedestrian access during construction operations. Hold the first meeting at least one week before the start of work under this contract and hold a meeting one week prior to each traffic staging change. The contractor shall arrange for a suitable location for meetings that provides reasonable accommodation for public involvement. The department will prepare and coordinate publication of the

meeting notices and mailings for meetings. The contractor shall schedule meetings with at least 2 weeks' prior notice to the engineer to allow for these notifications.

**18. Public Convenience and Safety.**

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

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

stp-107-001 (20060512)

**19. Available Documents.**

The following documents are available for review:

- Geotechnical Investigation Report
- Pavement Type Selection Report
- Environmental Document

Please contact Neng Yang, (262) 548-8771, [neng.yang@dot.wi.gov](mailto:neng.yang@dot.wi.gov), to obtain a copy of these documents.

**20. Notice to Contractor - Saw Cut Slurry**

Saw cut slurry that may be generated as part of this contract shall be collected and actively managed. Prevent deposition of saw cut slurry into wetlands, drainage courses and onto private property.

**21. Notice to Contractor - Concrete Washout Containment**

All concrete trucks shall wash out into a containment system located sufficiently away from the work area to prevent runoff into wetlands and drainage courses. The contractor shall provide a construction detail and location of the containment system with the ECIP and reviewed by the engineer prior to use.

**22. Notice to Contractor – Concrete Slip Form Paving.**

Due to the constrained urban environment some of WE Energies Electric power poles will be in close proximity to the roadway. Depending on the type of equipment and methods employed to slip form concrete pavement, concrete curb & gutter, and concrete sidewalk the power poles may affect the ability to slip form all pavement. The contractor is encouraged to review WE Energies Electric's Utility Work Plan and field review the as-built locations of all power poles prior to bidding on the project.

**23. Notice to Contractor – Western Kenosha County Transit System.**

The Western Kenosha County Transit System operates the following bus routes within the construction limits: Access to and from Village Plaza Shopping Center. Invite Western Kenosha County Transit System to all coordination meetings between the contractor, the department, local officials and business people to discuss the project schedule of operations including vehicular and pedestrian access during construction operations.

Notify Western Kenosha County Transit System at least ten (10) business days prior to beginning work. If necessary, Western Kenosha County Transit System will remove their existing bus stop signs and shelters before work begins and re-install or replace bus stop signs and shelters before new pavement opens to vehicular traffic. The contractor shall provide temporary bus stops with ADA compliant pedestrian accommodations, to be paid under separate bid item. Temporary bus stops must be

connected to the sidewalk network when one is available. Western Kenosha County Transit System will provide temporary bus stop signs.

The Western Kenosha County Transit System contact:

Mark Hinrichs  
Transportation Manager  
Kenosha Achievement Center, Inc.  
1218 79th Street  
Kenosha, WI 53143  
Phone: (262) 658-9561

SER-107-008 (20180413)

**24. Notice to Contractor – Traffic Signal Bases.**

Traffic signal bases in close proximity to underground utilities may require hydro excavation to excavate for the traffic signal base. The cost of hydro excavation is incidental to the cost of the traffic signal base.

**25. Notice to Contractor – Traffic Signal Equipment Lead Time.**

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

**26. Notice to Contractor – Pavement Breaking Equipment.**

Do not use guillotine, drop hammer, falling weight, gravity impact breakers or equivalent equipment within 300 feet of any structure. A multi-head hydraulic hammer is allowed unless a structure is within 50 feet of the roadway.

SER-204-001 (20161123)

**27. Notice to Contractor – Wood Water Pipes.**

Records indicate that wooden water pipes no longer in use may be encountered with excavation. The contractor shall notify the engineer whenever wooden water pipes are encountered and salvage the pipes so that local officials can save pieces of the wooden water pipes for historical records. Any portions of water pipes not needed by local officials shall be removed from the project site by the contractor as part of Excavation Common.

**28. Notice to Contractor – Waste Material**

A property owner in the project vicinity has notified the department that they are interested utilizing waste material from the project. Contact Brian Filiatreault, (262) 914-5705, [mbr@wi.rr.com](mailto:mbr@wi.rr.com) to determine how much waste the property owner is willing to take.

**29. Notice to Contractor – Parcel 30 Access**

Stage construction of Parcel 30 access in halves so that access is maintained to the parcel at all times.

**30. Removing Traffic Counter, Item 204.9060.S.01.**

**A Description**

This special provision describes removing a traffic counter in the Kenosha County Old Settler's Park parking lot conforming to standard spec 204.

**B (Vacant)**

**C (Vacant)**

**D Measurement**

The department will measure Removing Traffic Counter as a single unit, acceptably completed.

**E Payment**

*Add the following to standard spec 204.5:*

| ITEM NUMBER   | DESCRIPTION              | UNIT |
|---------------|--------------------------|------|
| 204.9060.S.01 | Removing Traffic Counter | EACH |

**31. Removing Vertical Panels, Item 204.9060.S.02.**

**A Description**

This special provision describes removing vertical traffic panels conforming to standard spec 204.

**B (Vacant)**

**C (Vacant)**

**D Measurement**

The department will measure Removing Vertical Panels as a single unit, acceptably completed.

**E Payment**

*Add the following to standard spec 204.5:*

| ITEM NUMBER   | DESCRIPTION  | UNIT |
|---------------|--|------|
| 204.9060.S.02 | Removing Vertical Panels<br>stp-204-025 (20150630) | EACH |

**32. Removing Private Light Pole, Item 204.9060.S.03**

**A Description**

This special provision describes removing and privately owned light pole, concrete base, and all electrical wires within the department right of way conforming to standard spec 204.

**B (Vacant)**

**C Construction**

Remove and dispose of the light pole, luminaire, concrete base, and all associate wiring within the department owned right of way in accordance with local electrical code. Coordinate with the adjacent property owner if access to property is needed to terminate the electrical wiring in accordance with local electrical code.

Additional work, if needed, to maintain proper operation of other light poles on the property is not included with this bid item. Additional work shall be approved by the engineer prior to beginning any additional work.

**D Measurement**

The department will measure Removing Private Light Pole as a single unit, acceptably completed.

**E Payment**

*Add the following to standard spec 204.5:*

| ITEM NUMBER   | DESCRIPTION                 | UNIT |
|---------------|-----------------------------|------|
| 204.9060.S.03 | Removing Private Light Pole | EACH |

Additional work necessary to maintain proper operation of other privately owned light poles on the same circuit shall be paid for separately based on payment approved by the engineer.

stp-204-025 (20150630)

**33. Removing Inlet Covers, Item 204.9060.S.04.**

**A Description**

This special provision describes removing existing inlet covers conforming to standard spec 204.

**B (Vacant)**

**C (Vacant)**

**D Measurement**

The department will measure Removing Inlet Covers as a single unit, acceptably completed.

**E Payment**

*Add the following to standard spec 204.5:*

| ITEM NUMBER            | DESCRIPTION           | UNIT |
|------------------------|-----------------------|------|
| 204.9060.S.04          | Removing Inlet Covers | EACH |
| stp-204-025 (20150630) |                       |      |

**34. Removing Traffic Signals STH 50 & STH 75/83, Item 204.9060.S.05; STH 50 & 246<sup>th</sup> Ave, Item 204.9060.S.06.**

**A Description**

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

**B (Vacant)**

**C Construction**

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

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

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

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

**D Measurement**

The department will measure Removing Traffic Signals STH 50 & STH 75/83 and Removing Traffic Signals STH 50 & 246<sup>th</sup> Ave as a single unit, acceptably completed.

**E Payment**

*Add the following to standard spec 204.5:*

| ITEM NUMBER   | DESCRIPTION                                 | UNIT |
|---------------|---|------|
| 204.9060.S.05 | Removing Traffic Signals STH 50 & STH 75/83 | EACH |

**35. Removing Loop Detector and Lead-In Cable STH 50 & STH 75/83, Item 204.9060.07; STH 50 & 246<sup>th</sup> Ave, Item 204.9060.08.**

**A Description**

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

**B (Vacant)**

**C Construction**

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

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

**D Measurement**

The department will measure Removing Loop Detector Wire & Lead In Cable STH 50 & STH 75/83 and Removing Loop Detector Wire and Lead In Cable STH 50 & 246<sup>th</sup> Ave as a single unit, acceptably completed.

**E Payment**

*Add the following to standard spec 204.5:*

| ITEM NUMBER            | DESCRIPTION  | UNIT |
|------------------------|--|------|
| 204.9060.S.07          | Removing Loop Detector Wire and Lead-In Cable STH 50 & STH 75/83             | EACH |
| 204.9060.S.08          | Removing Loop Detector Wire and Lead-In Cable STH 50 & 246 <sup>th</sup> Ave | EACH |
| stp-204-025 (20150630) |  |      |

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

**A Description**

**A.1 General**

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

Waste Management Pheasant Run Recycling and Disposal Facility

19414 60<sup>th</sup> Street

Bristol, WI 53104

(262) 857-7956

Advanced Disposal Emerald Park Landfill

W124 S10629 South 124<sup>th</sup> St.

Muskego, WI 53150

(414) 529-1360

Republic Services, Inc. Kestrel Hawk Landfill

1989 Oakes Road

Racine, WI 53406

(262) 884-7081

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

## **A.2 Notice to the Contractor – Contaminated Soil Locations**

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

1. STH 50 Station 1003+75 to 1004+75 from 50 feet LT of centerline to 25 feet RT of centerline.
2. STH 75 Station 50+25 to 50+75 from reference line to 110 feet RT of centerline.
3. STH 50 Station 1022+50 to 1024+00 from project limits left to project limits right.
4. STH 50 Station 1038+40 to 1040+25 from reference line to project limits right.

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

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

Name: Andrew Malsom  
Address: 141 NW Barstow St, PO Box 798, Waukesha, WI 53187-0798  
Phone: (262) 548-6705  
Fax: (262) 548-6891  
E-mail: [andrew.malsom@dot.wi.gov](mailto:andrew.malsom@dot.wi.gov)

## **A.3 Coordination**

Coordinate work under this contract with the environment consultant:

Consultant: TRC Environmental Corporation  
Address: 150 N Patrick Blvd, Suite 180, Brookfield, WI 53045  
Contact: Bryan Bergmann  
Phone: (262) 901-2126 (office), (262) 262-227-9210 (cell)  
Fax: (262) 879-1220  
E-mail: [bbergmann@trccompanies.com](mailto:bbergmann@trccompanies.com)

The role of the environmental consultant will be limited to:

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

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

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

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

## **A.4 Health and Safety Requirements**

*Add the following to standard spec 107.1:*

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

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

#### **B (Vacant)**

#### **C Construction**

*Add the following to standard spec 205.3:*

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

The environmental consultant will periodically evaluate soil excavated from the contaminated areas to determine if the soil will require offsite bioremediation. The environmental consultant will evaluate excavated soil based on field screening results, visual observations, and soil analytical results from previous environmental investigations. Assist the environmental consultant in collecting soil samples for evaluation using excavation equipment. The sampling frequency shall be a maximum of one sample for every 20 cubic yards excavated.

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

#### **D Measurement**

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

#### **E Payment**

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

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

Payment is full compensation for excavating, segregating, loading, hauling, and treatment via bioremediation of contaminated soil; obtaining solid waste collection and transportation service operating licenses; assisting in the collection soil samples for field evaluation; and dewatering of soils before transport, if necessary.

stp-205-003 (20150630)

### **37. QMP HMA Pavement Nuclear Density.**

#### **A Description**

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

- (1) This special provision describes density testing of in-place HMA pavement with the use of nuclear density gauges. Conform to standard spec 460 except as modified in this special provision.
- (2) Provide and maintain a quality control program defined as all activities and documentation of the following:
  1. Selection of test sites.
  2. Testing.
  3. Necessary adjustments in the process.
  4. Process control inspection.

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

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

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

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

## **B Materials**

### **B.1 Personnel**

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

### **B.2 Testing**

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

### **B.3 Equipment**

#### **B.3.1 General**

- (1) Furnish nuclear gauges according to CMM 8-15.2.  
(2) Furnish nuclear gauges from the department's approved product list at

<https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrcs/tools/appr-prod/default.aspx>

#### **B.3.2 Comparison of Nuclear Gauges**

##### **B.3.2.1 Comparison of QC and QV Nuclear Gauges**

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

##### **B.3.2.2 Comparison Monitoring**

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

## **B.4 Quality Control Testing and Documentation**

### **B.4.1 Lot and Sublot Requirements**

#### **B.4.1.1 Mainline Traffic Lanes, Shoulders, and Appurtenances**

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

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

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

### **B.4.2 Pavement Density Determination**

#### **B.4.2.1 Mainline Traffic Lanes and Appurtenances**

- (1) Calculate the average sublot densities using the individual test results in each sublot.  
(2) If all sublot averages are no more than one percent below the target density, calculate the daily lot density by averaging the results of each random QC test taken on that day's material.  
(3) If any sublot average is more than one percent below the target density, do not include the individual test results from that sublot when computing the lot average density and remove that sublot's tonnage from the daily quantity for incentive. The tonnage from any such sublot is subject to disincentive pay as specified in standard spec 460.5.2.2.

#### **B.4.2.2 Mainline Shoulders**

#### **B.4.2.2.1 Width Greater Than 5 Feet**

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

#### **B.4.2.2.2 Width of 5 Feet or Less**

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

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

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

#### **B.4.2.4 Documentation**

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

#### **B.4.3 Corrective Action**

- (1) Notify the engineer immediately when an individual test is more than 3.0 percent below the specified minimum in standard spec 460.3.3.1. Investigate and determine the cause of the unacceptable test result.
- (2) The engineer may require unacceptable material specified in B.4.3(1) to be removed and replaced with acceptable material or allow the nonconforming material to remain in place with a 50 percent pay reduction. Determine limits of the unacceptable area by measuring density of the layer at 50-foot increments both ahead and behind the point of unacceptable density and at the same offset as the original test site. Continue testing at 50-foot increments until a point of acceptable density is found as specified in standard spec 460.5.2.2(1). Removal and replacement of material may be required if extended testing is in a previously accepted subplot. Testing in a previously accepted subplot will not be used to recalculate a new lot density.
- (3) Compute unacceptable pavement area using the product of the longitudinal limits of the unacceptable density and the full subplot width within the traffic lanes or shoulders.
- (4) Retesting and acceptance of replaced pavement will be as specified in standard spec 105.3.
- (5) Tests indicating density more than 3.0 percent below the specified minimum, and further tests taken to determine the limits of unacceptable area, are excluded from the computations of the subplot and lot densities.
- (6) If two consecutive subplot averages within the same paving pass and same target density are more than one percent below the specified target density, notify the engineer and take necessary corrective action. Document the locations of such sublots and the corrective action that was taken.

### **B.5 Department Testing**

#### **B.5.1 Verification Testing**

- (1) The department will have a HTCP certified technician, or ACT working under a certified technician, perform verification testing. The department will test randomly at locations independent of the contractor's QC work. The department will perform verification testing at a minimum frequency of 10 percent of the sublots and a minimum of one subplot per mix design. The sublots selected will be within the active work zone. The contractor will supply the necessary traffic control for the department's testing activities.
- (2) The QV tester will test each selected subplot using the same testing requirements and frequencies as the QC tester.
- (3) If the verification subplot average is not more than one percent below the specified minimum target density, use the QC tests for acceptance.
- (4) If the verification subplot average is more than one percent below the specified target density, compare the QC and QV subplot averages. If the QV subplot average is within 1.0 lb/ft<sup>3</sup> of the QC subplot average, use the QC tests for acceptance.
- (5) If the first QV/QC subplot average comparison shows a difference of more than 1.0 lb/ft<sup>3</sup> each tester will perform an additional set of tests within that subplot. Combine the additional tests with the original set of

tests to compute a new subplot average for each tester. If the new QV and QC subplot averages compare to within 1.0 lb/ft<sup>3</sup>, use the original QC tests for acceptance.

- (6) If the QV and QC subplot averages differ by more than 1.0 lb/ft<sup>3</sup> after a second set of tests, resolve the difference with dispute resolution specified in B.6. The engineer will notify the contractor immediately when density deficiencies or testing precision exceeding the allowable differences are observed.

### **B.5.2 Independent Assurance Testing**

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

### **B.6 Dispute Resolution**

- (1) The testers may perform investigation in the work zone by analyzing the testing, calculation, and documentation procedures. The testers may perform gauge comparison according to B.3.2.1.
- (2) The testers may use comparison monitoring according to B.3.2.2 to determine if one of the gauges is out of tolerance. If a gauge is found to be out of tolerance with its reference value, remove the gauge from the project and use the other gauge's test results for acceptance.
- (3) If the testing discrepancy cannot be identified, the contractor may elect to accept the QV subplot density test results or retesting of the subplot in dispute within 48 hours of paving. Traffic control costs will be split between the department and the contractor.
- (4) If investigation finds that both gauges are in error, the contractor and engineer will reach a decision on resolution through mutual agreement.

### **B.7 Acceptance**

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

### **C (Vacant)**

### **D (Vacant)**

### **E Payment**

#### **E.1 QMP Testing**

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

#### **E.2 Disincentive for HMA Pavement Density**

- (1) The department will administer density disincentives as specified in standard spec 460.5.2.2.

#### **E.3 Incentive for HMA Pavement Density**

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

## **38. Cold Patch, Item 495.1000.S.**

### **A Description**

This special provision describes furnishing cold patch and filling potholes and other voids in existing pavement surfaces as the engineer directs.

### **B Materials**

Furnish a mixture of course aggregate, natural sand, and MC-250 bituminous material designed to have a workability range of 15-100° F without heating. Ensure that the mixture:

- Adheres to wet surfaces.
- Resists damage from water, salt, and deicing products.

- Requires no mixing or special handling before use.
- Supports traffic immediately after placement and compaction.

Conform to the following gradation:

| SIEVE SIZE         | PERCENT PASSING (by weight) |
|--------------------|-----------------------------|
| 1/2-inch (12.5 mm) | 100                         |
| 3/8-inch (9.5 mm)  | 90 - 100                    |
| No. 4 (4.75 mm)    | 90 max                      |
| No. 8 (2.38 mm)    | 20 - 65                     |
| No. 200 (0.074 mm) | 2 - 10                      |
| Bitumen            | 4.8 - 5.4                   |

The department will accept cold patch based primarily on the engineer's visual inspection. The department may also test for gradation.

### C Construction

Stockpile cold patch on site on a smooth, firm, well-drained area cleared of vegetation and foreign material. Cover the stockpile and ensure that it is easily accessible. Replenish the stockpile throughout the project duration but limit the size at any given time to 10 tons on site unless the engineer approves otherwise. Dispose of unused material at project completion unless the engineer directs otherwise.

Place cold patch by hand. Remove ponded water and loose debris before placement. Compact flush with a tamper, roller, or vehicle tire after placement.

Refill patched areas as necessary to maintain a flush pavement surface until project completion.

### D Measurement

The department will measure Cold Patch by the ton, acceptably stockpiled on site.

### E Payment

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

| ITEM NUMBER | DESCRIPTION | UNIT |
|-------------|-------------|------|
| 495.1000.S  | Cold Patch  | TON  |

Payment for Cold Patch is full compensation for providing and maintaining patches; for furnishing and replenishing stockpiled material on-site; and for disposing of excess material at project completion.

stp-495-010 (20160607)

## 39. Surface Drain Pipe Corrugated Metal Slotted, 8-Inch, Item 521.2005.S.01.

### A Description

This special provision describes furnishing and installing slotted corrugated metal pipe surface drain as the plans show.

Conform to standard spec 521 as modified in this special provision.

### B Materials

Furnish backfill material that is grade A concrete conforming to standard spec 501 as modified in standard spec 716. Provide QMP for class III ancillary concrete as specified in standard spec 716.

### C Construction

Before backfilling, plug the upper end of the slotted drain as the plans show or as approved by the engineer.

Before backfill operations adjacent to the slotted area of the slotted corrugated metal pipe surface drain pipe, install timber blocks in the slots according to the plan details. Remove any material entering the pipe at no expense to the department.

Keep the timber blocks in place until final cleanup operations are completed; at which time, remove the timber blocks.

Exercise care to avoid damage to the slotted corrugated metal pipe surface drain pipe. If any section of pipe is damaged or is unsatisfactory as determined by the engineer, replace the drain pipe at no expense to the department.

**D Measurement**

The department will measure Surface Drain Pipe Corrugated Metal Slotted, 8-Inch, completed according to the contract and accepted, in place by the linear foot.

**E Payment**

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

| ITEM NUMBER   | DESCRIPTION   | UNIT |
|---------------|---|------|
| 521.2005.S.01 | Surface Drain Pipe Corrugated Metal Slotted, 8-Inch | LF   |

Payment is full compensation for furnishing all materials; hauling and placing the pipe, including bands; making connections to existing inlets; furnishing concrete, end plug or cap; and for cleaning out and restoring site of work.

stp-521-005 (20210708)

**40. Riprap Medium, Item 606.0200.**

*Modify section 606.3 of the standard specs with the following:*

Riprap and geotextile fabric shall be installed at apron endwalls where shown on the erosion control plans within 1 working day of when adjacent apron endwall is installed.

**41. Cover Plates Temporary, Item 611.8120.S.**

**A Description**

This special provision describes providing and removing steel plates to cover and support asphaltic pavement and traffic loading at manholes, inlets and similar structures during milling and paving operations.

**B Materials**

Provide a 0.25 inch minimum thickness steel plate that extends to the outside edge of the existing masonry.

**C (Vacant)**

**D Measurement**

The department will measure Cover Plates Temporary as each individual unit, acceptably completed.

**E Payment**

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

| ITEM NUMBER | DESCRIPTION            | UNIT |
|-------------|------------------------|------|
| 611.8120.S  | Cover Plates Temporary | EACH |

Payment is full compensation for furnishing, installing, and removing the cover plates.

The steel plates shall become the property of the contractor when no longer needed in the contract work.

stp-611-006 (20151210)

**42. Insulation Board Polystyrene, 2-Inch, Item 612.0902.S.01.**

**A Description**

This special provision describes furnishing and placing polystyrene insulation board as the plans show.

**B Materials**

Provide polystyrene insulation board that conforms to the requirements for Extruded Insulation Board, AASHTO Designation M230 as modified in this special provision.

Delete flammability requirement.

#### **B.1 Certification**

Before installation, obtain from the manufacturer a certification indicating compliance and furnish it to the project engineer.

#### **C (Vacant)**

#### **D Measurement**

The department will measure Insulation Board Polystyrene, 2-Inch by area in square yards of work, completed and accepted.

#### **E Payment**

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

| ITEM NUMBER   | DESCRIPTION                          | UNIT |
|---------------|--------------------------------------|------|
| 612.0902.S.01 | Insulation Board Polystyrene, 2-Inch | SY   |

Payment is full compensation for all excavation; and for furnishing and placing the insulation board.

stp-612-005 (20030820)

### **43. Topsoil and Salvaged Topsoil.**

Add the following to standard spec 625.2:

- (3) Furnish material that is relatively free from large roots, sticks, weeds, brush, stones, litter, and waste products.
- (4) Do not use surface soils from ditch bottoms, drained ponds, and eroded areas, or soils which are supporting growth of NR 40 listed plants and noxious weeds or other undesirable vegetation. Ensure that the material conforms to the following:

| Topsoil Requirements | Minimum Range | Maximum Range |
|----------------------|---------------|---------------|
| Organic Matter*      | 5%            | 20%           |
| Clay                 | 5%            | 30%           |
| Silt                 | 10%           | 70%           |
| Sand & Gravel        | 10%           | 70%           |

\*Organic matter determined by loss on ignition test of samples oven dried to constant weight at 212 F (100 C).  
SER-625-001 (20160831)

### **44. Signs Type I and II.**

Furnish and install mounting brackets per approved product list for type II signs on overhead sign supports incidental to sign. For type II signs on sign bridges use aluminum vertical support beams noted above incidental to sign.

Supplement standard spec 637.2.4 with the following:

Use stainless steel bolts, washers and nuts for type I and type II signs mounted on sign bridges or type I signs mounted on overhead sign supports. Use clips on every joint for Sign Plate A 4-6 when mounted on a sign bridge or overhead sign support. Inspect installation of clips and assure bolts and nuts are tightened to manufacturers recommended torque values.

Use aluminum vertical sign support beams that have a 5-inch wide flange and weigh 3.7 pounds per foot, if the L-brackets are 4 inches wide then use 4 inch wide flange beams weighing 3.06 pounds per foot. Contractor shall measure the width of the L-brackets on existing structures of determine the width needed for sign support beams.

Use beams a minimum of six feet in length or equal to the height of the sign to be supported, whichever is greater. Use U-bolts that are made of stainless steel, one-half inch diameter and of the proper size to fit the truss cords of each sign bridge. Install vertical sign support beams on each sign and use new U-bolts to attach each beam to the top and bottom cord of the sign bridge truss.

For type II signs on overhead sign supports follow the approved product list for mounting brackets.

Replace standard spec 637.3.3.2(2) with the following:

- (2) Install Type I Signs at the offset stated in the plan, which shall be the clear distance between the edge of mainline pavement right edgeline and the near edge of the sign.

Supplement standard spec 637.3.3.3(3) with the following:

Furnish and install new aluminum vertical sign support beams on each sign and new U-bolts to attach each beam to the top and bottom cord of the sign bridge truss for Type I or Type II Signs and Type I signs on overhead sign supports incidental to sign.

Add the following to standard spec 641.2:

Submit shop drawings for sign bridges and overhead sign supports to SE Region Traffic Operations Engineer, Tom Heydel and Bureau of Structures Design.

SER-637-001 (20170621)

## **45. Nighttime Work Lighting-Stationary.**

### **A Description**

This special provision describes furnishing portable lighting as necessary to complete nighttime work. Nighttime operations consist of work specifically scheduled to occur after sunset and before sunrise.

### **B (Vacant)**

### **C Construction**

#### **C.1 General**

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

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

1. Layout, including location of portable lighting – lateral placement, height, and spacing. Clearly show on the layout the location of all lights necessary for every aspect of work to be done at night.
2. Specifications, brochures, and technical data of all lighting equipment to be used.
3. The details on how the luminaires will be attached.
4. Electrical power source information.
5. Details on the louvers, shields, or methods to be employed to reduce glare.
6. Lighting calculations. Provide illumination with average to minimum uniformity ratio of 5:1 or less throughout the work area.
7. Detail information on any other auxiliary equipment.

#### **C.2 Portable Lighting**

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

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

#### **C.3 Light Level and Uniformity**

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

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

#### **C.4 Glare Control**

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

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

1. Aim tower-mounted luminaires, either parallel or perpendicular to the roadway, so as to minimize light aimed toward approaching traffic.
2. Aim all luminaires such that the center of beam axis is no greater than 60 degrees above vertical (straight down).

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

#### **C.5 Continuous Operation**

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

#### **D (Vacant)**

#### **E Payment**

Costs for furnishing a lighting plan, and for providing, maintaining, moving, and removing portable lighting, tower mounted lighting, and equipment-mounted lighting required under this special provision are incidental to the contract.

stp-643-010 (20100709)

### **46. Traffic Signals, General.**

All work shall be in accordance to the plans and the State of Wisconsin Department of Transportation Standard Specifications for Highway and Structure Construction, 2022 Edition, and these special provisions.

Failure to comply with the state standards and specifications may result in the cost of the corrections to be made at the Contractors' expense. Any additional disruption of Department-owned facilities shall be repaired or relocated as needed at the Contractors' expense.

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

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

### **47. General Requirements for Electrical Work.**

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

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

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

**48. Electrical Service Meter Breaker Pedestal, Item 656.0200.01, Item 656.0200.02.**

*Add the following to standard specification 656.2.3:*

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

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

*Add the following to standard specification 656.3.4:*

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

*Add the following to standard specification 656.5(3):*

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

**49. Traffic Signal Faces.**

*Replace standard specification 658.2(3) with the following:*

<sup>(3)</sup> For traffic signal faces: furnish signal housings, visors, LED modules, backplates, and cut away or tunnel type visors as the plans show. The visors shall be a dull black. The backplates shall be a reflective yellow. Signal head housings shall be black.

*Add the following to standard specification 658.3:*

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

**50. Pedestrian Signal Faces 16-Inch, Item 658.0416.**

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

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

**51. Pedestrian Push Buttons, Item 658.0500.**

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

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

**52. Signal Mounting Hardware, Item 658.5069.**

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

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

**53. Temporary Traffic Signal for Intersections STH 50 & STH 75/83, Item 661.0200.01; STH 50 & 246<sup>th</sup> Ave, Item 661.0200.02**

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

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

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

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

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

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

*Append 661.2.1 of the standard specifications with the following:*

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

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

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

*Append 661.3.1.4 of the standard specifications with the following:*

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

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

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

*Append 661.3.2.6 of the standard specifications with the following:*

(6) Remove the CCTV camera, hardware, mounting brackets and cabling from the temporary traffic signal installation and return it to the department.

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

(2) Respond within one hour of notification to provide corrective action to any emergency such as but not limited to knockdowns, signal cable problems, and controller equipment failures. If equipment becomes damaged or faulty beyond repair, replace it within one working day. In order to fulfill this requirement, maintain, in stock, sufficient materials and equipment to provide repairs. Replace the traffic signal control

equipment including the cabinet and cabinet accessories within 4 hours. If the outcome of the response identifies damage to the department furnished signal controller, notify the Traffic Management Center at (800) 375-7302 who will then dispatch the SE Region Electrical Field Unit

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

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

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

Payment is full compensation for drilling holes; furnishing and installing all materials, including bricks, and coarse aggregate; for excavation, bedding, and backfilling, including any sand or other required materials; furnishing and placing topsoil, fertilizer, seed, and mulch in disturbed areas; for properly disposing of surplus materials; for making inspections; for cleaning up and properly disposing of waste; for removing and delivering the CCTV camera, hardware, mounting brackets and cabling from the temporary traffic signal installation to the department; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

#### **54. Manhole 9-Ft Diameter, Item SPV.0060.01.**

##### **A Description**

This special provision describes providing a 9 foot diameter manhole in accordance with section 611 of the standard specifications.

##### **B Materials**

Furnish materials in accordance with section 611.2 of the standard specifications.

##### **C Construction**

Construct in accordance with section 611.3 of the standard specifications.

##### **D Measurement**

The department will measure Manhole 9-Ft Diameter by the 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.0060.01 | Manhole 9-Ft Diameter | EACH |

Payment shall be in accordance with section 611.5.2 of the standard specs.

#### **55. Grading and Shaping Curb Ramps One Ramp, Item SPV.0060.02; Grading and Shaping Curb Ramps Two Ramps, Item SPV.0060.03.**

##### **A Description**

This special provision describes excavating, grading, shaping, and compacting curb ramps, sidewalk and asphalt paths on approaches to curb ramps.

##### **B Materials**

- (1) Furnish embankment and borrow in accordance with Section 207.2 and 208.2 of the standard specs.
- (2) Provide water for subgrade compaction in accordance with Section 624.2 of the standard specs.

##### **C Construction**

- (1) Excavate, grade, shape, and compact the subgrade to the depth and width shown on the plans in accordance with Section 205.3 of the standard specs.
- (2) Grade and shape embankment or borrow material in accordance with Section 207.3 of the Standard Specs.
- (3) Apply water for subgrade compaction in accordance with Section 624.3 of the Standard Specs.

## D Measurement

The department will measure Grading and Shaping Curb Ramp One Ramp; Grading and Shaping Curb Ramp Two Ramps by the individual unit acceptably completed.

Measurement for grading and shaping curb ramps includes all sidewalk and asphalt path areas on the approaches to each curb ramp.

## E Payment

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

| ITEM NUMBER | DESCRIPTION                             | UNIT |
|-------------|---|------|
| SPV.0060.02 | Grading and Shaping Curb Ramp One Ramp  | EACH |
| SPV.0060.03 | Grading and Shaping Curb Ramp Two Ramps | EACH |

Payment is full compensation for all excavation, compaction, embankment, borrow required to grade to the locations and elevations shown on the plan in accordance with Sections 205.5, 207.5, and 208.5 of the Standard Specs; for providing and applying water for subgrade compaction in accordance with section 624.5 of the Standard Specs; and for disposal and hauling of excess material including waste excavation.

Separate payment will be made for removing asphaltic surface, removing concrete sidewalk, for providing and placing base aggregate dense, and for providing and constructing concrete sidewalk.

## 56. Field Facilities Office Space, Item SPV.0060.04.

### A Description

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

### B Materials

Provide Field Facilities Office Space conforming to standard spec 642.2.1 except delete paragraphs (1), (7), and (9).

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, and stock with sanitary supplies for the duration of the contract. Furnish office space in an existing office building or existing building converted to office space with a minimum of 1200 square feet. The facility shall have no fee parking with a minimum parking for 15 cars. The space shall include a meeting room with a minimum of 350 square feet. The exterior door(s) shall have locks in good working order and keys provided for all field staff. The office space shall be located within 2 miles of the construction project.

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

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

Provide for the professional cleaning of the field office during regular business hours twice monthly. Provide clearly marked recycling and waste receptacles within the field office, and separate recycling and waste dumpsters near the field office. Cover outdoor containers to keep out rain, snow, and wind-driven debris. Provide regularly scheduled recycling and waste pick-up.

### C Construction

Conform to standard spec 642.3 except delete paragraph (2).

### D Measurement

The department will measure the Field Facilities Office Space as each office acceptably completed.

#### **E Payment**

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

| ITEM NUMBER | DESCRIPTION                   | UNIT |
|-------------|-------------------------------|------|
| SPV.0060.04 | Field Facilities Office Space | EACH |

Payment is full compensation for providing, equipping, securing, and maintaining the facility; for parking, for telecommunications equipment, installation, and service fees; and for providing bottled water, utilities, fuel, ventilation, and toilet facilities as required, either independently or jointly with the field laboratory, for the time specified in 642.3.

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

SER-642-002 (20160808)

### **57. Concrete Saddle, Item SPV.0060.05.**

#### **A Description**

This special provision describes providing a concrete saddle to protect water main and force main where the clearance between the water main or force main and the proposed sanitary sewer is less than 18 inches.

#### **B Materials**

Provide concrete in accordance with section 520.2.4 of the standard specs.

#### **C Construction**

Construct concrete saddle using concrete as specified in 520.2.4 of the standard specs to the dimensions shown in the construction details of the plan.

#### **D Measurement**

The department will measure Concrete Saddle by the individual unit acceptably completed. One concrete saddle consists of a pair of saddles, one constructed on either side of the water main or force main.

#### **E Payment**

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

| ITEM NUMBER | DESCRIPTION     | UNIT |
|-------------|-----------------|------|
| SPV.0060.05 | Concrete Saddle | EACH |

Payment is full compensation for all excavating; for any shoring required beyond normal storm sewer excavation; for all formwork; for providing all concrete; and for consolidating all concrete.

Foundation backfill and all excavation required for storm sewer installation shall be paid for using the appropriate storm sewer pay item.

### **58. Section Corner Monuments, Item SPV.0060.06.**

#### **A Description**

Coordinate with Southeastern Wisconsin Regional Planning Commission (SEWRPC) for the perpetuation and replacement of a section corner (Public Land Survey System- PLSS) monument.

#### **B Materials**

SEWRPC will provide a pre-cast concrete monument or brass disk to be used to mark the PLSS corner.

Furnish base aggregate dense materials that conform to standard spec 305. Furnish concrete, asphalt, topsoil or other materials depending on the surface surrounding the corner.

#### **C Construction**

SEWRPC will perpetuate existing section corner monument. The CONTRACTOR is responsible to coordinate with SEWRPC and the WisDOT Project Manager throughout the perpetuation and

replacement process. The CONTRACTOR will contact the engineer and SEWRPC at (262) 953-4295 at least two (2) weeks before starting construction operations or the preconstruction meeting to allow for section corner monument perpetuation.

CONTRACTOR must excavate and completely remove the existing monument. CONTRACTOR is responsible for providing a backfilled 3 to 4 foot deep hole where existing monument was removed. CONTRACTOR is responsible to coordinate the materials and methodology to complete the construction of the surface surrounding the monument. This may include but is not limited to a 2' x 2' "box out" or 24" diameter core hole in concrete, asphalt pavement/paving rings, coring to facilitate poured in place monuments, topsoil, seed and mulching or other materials or methodologies as agreed to by the CONTRACTOR and SEWRPC.

**Contact Information:**

Attn: John Washburn  
Southeastern Wisconsin Regional Planning Commission  
W239 N1812 Rockwood Drive  
P.O. Box 1607  
Waukesha, WI 53187-1607  
Phone (262) 547-6721  
Cell (262) 953-4295  
Fax (262) 547-1103  
[jwashburn@sewrpc.org](mailto:jwashburn@sewrpc.org)

**D Measurement**

The department will measure Section Corner Monuments Special by the 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.0060.06 | Section Corner Monuments | EACH |

Payment is full compensation for all excavating; removal of existing monument, for placing and compacting backfill material; for disposing of surplus materials; for concrete or asphalt material, finishing of roadway or other surfaces, for all coordination with SEWRPC.

SER-621-001 (20170530)

**59. Construction Staking Pond Layout, Item SPV.0060.08.**

**A Description**

This special provision describes providing contractor performed construction staking to establish the horizontal and vertical position for a stormwater basin.

**B (Vacant)**

**C Construction**

Perform staking in accordance with section 650.3 of the standard specifications.

Install stakes at an interval sufficient to construct the pond in accordance with details provided in the plan.

**D Measurement**

The department will measure Construction Staking Pond Layout by the individual pond 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.0060.08 | Construction Staking Pond Layout | EACH |

Payment shall be in accordance with section 650.3.

**60. Temporary Pipe Connection 12-Inch, Item SPV.0060.09; Temporary Pipe Connection 15-Inch, Item SPV.0060.10; Temporary Pipe Connection 18-Inch, Item SPV.0060.11; Temporary Pipe Connection 21-Inch, Item SPV.0060.12; Temporary Pipe Connection 24-Inch, Item SPV.0060.13.**

**A Description**

This special provision describes providing a temporary pipe connection between existing storm sewer and proposed storm sewer during staging in accordance with section 612 of the standard specs.

**B Materials**

Furnish unperforated pipe underdrain and fittings in accordance with section 612.2 of the standard specs.

For pipe sizes 21 inches in less the pipe material shall be polyvinyl chloride (PVC) or acrylonitrile-butadiene-styrene (ABS).

For pipe sizes 24 inches and larger the pipe material shall be corrugated steel or corrugated polyethylene.

Furnish concrete for concrete collars in accordance with section 520.2.4.

**C Construction**

Install temporary pipe connections in accordance with section 612 of the standard specifications.

For connections made with PVC and ABS pipe elbows shall be used to correct any horizontal and vertical offsets. All elbows and other fittings shall be incidental to the temporary pipe connection.

For connections made with corrugated steel and corrugate polyethylene pipe horizontal and vertical offset shall be made using mechanical bands, concrete collars, or other engineer approved method. All methods of connection are incidental to the temporary pipe connection.

Connect the temporary pipe connection to the existing and proposed storm sewer using an engineer approved method that is watertight and does not damage the proposed storm sewer pipe.

Remove the temporary pipe connection when it is no longer needed to maintain drainage. Backfill the excavation in accordance with section 204 of the standard specs.

**D Measurement**

The department will measure Temporary Pipe Connection 12-Inch, Temporary Pipe Connection 15-Inch, Temporary Pipe Connection 18-Inch, Temporary Pipe Connection 21-Inch, and Temporary Pipe Connection 24-Inch by the 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.0060.09 | Temporary Pipe Connection 12-Inch | EACH |
| SPV.0060.10 | Temporary Pipe Connection 15-Inch | EACH |
| SPV.0060.11 | Temporary Pipe Connection 18-Inch | EACH |
| SPV.0060.12 | Temporary Pipe Connection 21-Inch | EACH |
| SPV.0060.13 | Temporary Pipe Connection 24-Inch | EACH |

Payment is full compensation for providing pipe and fittings; for all mechanical bands, concrete collars, or other pipe to pipe connections; for connections to existing and proposed storm sewer; for all excavation, compaction, and backfill; for preparing the foundation; for all detwatering; for removing the pipe and backfilling the excavation.

If material from the typical section is not available then payment for trench backfill shall be in accordance with section 520.5.2 of the standard specs.

**61. Install Poles Type 9, Item SPV.0060.14; Install Poles Type 9 Special, Item SPV.0060.15; Install Monotube Arms 25-FT, Item SPV.0060.16; Install Monotube Arms 30-FT, Item SPV.0060.17; Install Monotube Arms 40-FT Type 9/10 Special Pole, Item SPV.0060.18.**

**A Description**

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

**B Materials**

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

**C Construction**

Install equipment in accordance to standard spec 657.3.

**D Measurement**

The department will measure Install Poles Type 9, Install Poles Type 9 Special, Install Monotube Arms 25-FT, Install Monotube Arms 30-FT, and Install Monotube Arms Type 9/10 Special Pole by the 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.0060.14 | Install Poles Type 9                               | EACH |
| SPV.0060.15 | Install Poles Type 9 Special                       | EACH |
| SPV.0060.16 | Install Monotube Arms 25-FT                        | EACH |
| SPV.0060.17 | Install Monotube Arms 30-FT                        | EACH |
| SPV.0060.18 | Install Monotube Arms 40-FT Type 9/10 Special Pole | EACH |

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

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

**62. Install Camera Assembly Temporary Signal Pole, Item SPV.0060.19.**

**A Description**

This special provision describes delivering department furnished CCTV camera assembly and camera bracket and hardware, installing on existing temporary signal poles, maintaining the camera and hardware, salvaging and returning department-furnished equipment to the department.

**B Materials**

The department will furnish the CCTV camera assembly, bracket and hardware. Pick up the state-furnished materials at the department's Electrical Shop located at 935 South 60<sup>th</sup> Street, West Allis. Notify the department's Electrical Field Unit at (414) 266-1170 and arrange for picking up the materials five working days prior to picking the materials up.

Provide any other necessary material required to complete the installation as depicted in the detail.

Conform to standard spec 677.2.

**C Construction**

Install equipment on existing temporary signal poles according to standard spec 677.3.

*Replace standard spec 677.3(7) with the following:*

For permanent camera installations, provide camera cables in conduit and poles as the plans show. For temporary traffic signal camera installations, provide camera cables on the temporary traffic signal span wire as depicted in the detail. Provide continuous cable runs without splices between the camera assembly and the camera controller assembly.

Prior to temporary signal pole removal, remove the CCTV camera, hardware, mounting brackets and cabling from the temporary traffic signal installation. Return all department furnished hardware to the department.

#### **D Measurement**

The department will measure Install Camera Assembly Temporary Signal Pole by the 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.0060.19 | Install Camera Assembly Temporary Signal Pole | EACH |

Payment is full compensation for picking up and delivering department furnished camera assembly and mounting hardware; installing department furnished camera assemblies on temporary signal poles; for providing camera cables; and for installing all necessary connections; for maintaining and adjusting, salvaging, and returning department furnished equipment to the department. Installation of temporary signal poles is included under a separate pay item.

### **63. Transport & Install State Furnished Traffic Signal Cabinet STH 50 & STH 75/83, Item SPV.0060.20; STH 50 & 246<sup>th</sup> Ave, Item SPV.0060.21.**

#### **A Description**

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

#### **B Materials**

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

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

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

#### **C Construction**

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

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

Coordinate directly with the department's traffic signal cabinet vendor {TAPCO at 262-814-7327 or rickk@tapconet.com / TCC at 651-439-1737 or mallwood@trafficcontrolcorp} to schedule the cabinet acceptance testing. Coordinate with the department's Electrical Field Unit at (414)-266-1170 to participate in the acceptance testing. The department has final determination of the cabinet acceptance testing date and time.

#### **D Measurement**

The department will measure Transport & Install State Furnished Traffic Signal Cabinet STH 50 & STH 75/83 and Transport & Install State Furnished Traffic Signal Cabinet STH 50 & 246<sup>th</sup> Ave by the 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.0060.20 | Transport & Install State Furnished Traffic Signal Cabinet STH 50 & STH 75/83             | EACH |
| SPV.0060.21 | Transport & Install State Furnished Traffic Signal Cabinet STH 50 & 246 <sup>th</sup> Ave | EACH |

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

**64. Transport Traffic Signal & Intersection Lighting Materials STH 50 & STH 75/83, Item SPV.0060.22; STH 50 & 246<sup>th</sup> Ave, Item SPV.0060.23.**

**A Description**

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

**B Materials**

Transport materials furnished by the department including: monotube arms and poles.

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

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

**C Construction**

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

**D Measurement**

The department will measure Transport Traffic Signal & Intersection Lighting Materials STH 50 & STH 75/83 and Transport Traffic Signal & Intersection Lighting Materials STH 50 & 246<sup>th</sup> Ave by the 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.0060.22 | Transport Traffic Signal & Intersection Lighting Materials STH 50 & STH 75/83             | EACH |
| SPV.0060.23 | Transport Traffic Signal & Intersection Lighting Materials STH 50 & 246 <sup>th</sup> Ave | EACH |

Payment is full compensation for transporting the monotube poles and arms. Installation of these materials is included under a separate pay item.

**65. Transport & Install State Furnished EVP Detector Heads STH 50 & STH 75/83, Item SPV.0060.24; STH 50 & 246<sup>th</sup> Ave, Item SPV.0060.25.**

**A Description**

This special provision describes the transporting and installing of state furnished Emergency Vehicle Preemption (EVP) detector heads and mounting brackets.

**B Materials**

Use materials furnished by the department including: EVP detector heads and mounting brackets.

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

**C Construction**

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

Notify the department's Electrical shop at (414) 266-1170 upon completion of the installation of the EVP equipment.

#### **D Measurement**

The department will measure Transport & Install State Furnished EVP Detector Heads STH 50 & STH 75/83 and Transport & Install State Furnished EVP Detector Heads STH 50 & 246<sup>th</sup> Ave by the 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.0060.24 | Transport & Install State Furnished EVP Detector Heads STH 50 & STH 75/83             | EACH |
| SPV.0060.25 | Transport & Install State Furnished EVP Detector Heads STH 50 & 246 <sup>th</sup> Ave | EACH |

Payment is full compensation for transporting and installing of department furnished EVP detector heads and mounting brackets; and for all labor, tools, equipment, and incidentals necessary to complete this item of work.

### **66. Temporary Emergency Vehicle Preemption System STH 50 & STH 75/83, Item SPV.0060.26; STH 50 & 246<sup>th</sup> Ave, Item SPV.0060.27.**

#### **A Description**

This special provision describes maintaining an emergency vehicle preemption system during construction at the temporary signalized intersection as shown in the plans.

#### **B Materials**

Furnish an emergency vehicle preemption system compatible with the municipality's systems and users. Contact the appropriate municipality for information to confirm the operational requirements of the temporary emergency vehicle preemption system.

#### **C Construction**

The Temporary EVP System, as shown in the temporary traffic signal plans or as directed by the engineer, shall be complete in place, tested, and in full operation during each stage and sub-stage of construction.

Install the EVP system as shown in the plans for each construction stage and according to the manufacturer's recommendations. Detectors may be mounted on the temporary traffic signal span wire or wood poles. Relocate the temporary EVP detectors to a suitable location if construction activities and/or construction staging changes impede the detector operation. Arrange for testing of equipment prior to acceptance of the installation for each construction stage.

All cables associated with the temporary EVP system shall be routed to the cabinet. Each lead shall be appropriately marked as to which EVP channel it is associated.

Periodic adjustment and/or moving of the temporary EVP detectors may be required due to changes in traffic control, staging, or other construction operations.

Ensure that the temporary EVP system stays in clean working order. Periodic cleaning of the equipment may be required due to dirt and dust build-up.

Remove the temporary EVP system upon project completion.

Provide the engineer records of all EVP settings used during construction.

#### **D Measurement**

The department will measure Temporary Emergency Vehicle Preemption System STH 50 & STH 75/83 and Temporary Emergency Vehicle Preemption System STH 50 & 246<sup>th</sup> Ave by the 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.0060.26 | Temporary Emergency Vehicle Preemption System STH 50 & STH 75/83             | EACH |
| SPV.0060.27 | Temporary Emergency Vehicle Preemption System STH 50 & 246 <sup>th</sup> Ave | EACH |

Payment is full compensation for furnishing and installing a temporary emergency vehicle preemption system, complete and fully operational at an intersection.

## **67. Moving and New Rectangular Rapid Flashing Beacon System STH 50 at 248<sup>th</sup> Avenue Station 1018+50 EB Right, Item SPV.0060.28; Station 1026+00 EB Right, Item SPV.0060.29; Station 1026+30 WB Right, Item SPV.0060.30; Station 1026+25 Median, Item SPV.0060.31; Station 1040+50 WB Right, Item SPV.0060.32.**

### **A Description**

This work shall consist of moving existing solar powered rectangular rapid flashing beacon (RRFB) system consisting of multiple assemblies as described herein and as shown in the plans. Each assembly shall be solar powered and pedestrian activated. The assemblies are existing wirelessly controlled and multiple units shall be synchronized. This specification is in accordance with requirements contained in FHWA interim approval 1A-21 dated March 20, 2018 for flashing requirements and beacon operation.

A new back to back assembly shall be furnished in the median at station 1026+25. Reuse the RRFB portion.

### **B Materials**

Move the RRFB system with multiple assemblies. The median assembly shall be new assembly (back to back RRFB ) furnished by the contractor and each assembly consists of, but not limited to, light indications, and electrical components (wiring, solid-state circuit boards, etc). An assembly may include the following items:

#### **B.1 Light Indications**

- (1) Each indication shall be a minimum size of approximately 7" wide x 3" high with 8 high power LEDs
- (2) Two indications shall be installed on an assembly facing in the direction of approaching vehicular traffic. The two indications shall be aligned horizontally, with the longer dimension of the indication horizontal, and a minimum space between the two indications of approximately 7" measured from inside edge of one indication to inside edge of second indication.
- (3) A 6 LED or approved equal indication shall be installed on an assembly facing in the direction of approaching pedestrian traffic to serve as a confirmation for the pedestrian that the system has been activated.
- (4) The outside edges of the two indications, including any housing, shall not protrude beyond the outside edges of the integral signage of the assembly.
- (5) The light intensity of the indications shall be certified to meet the minimum specifications of the Society of Automotive Engineers (SAE) standard J595 Class 1(Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated January 2005 and be available upon request
- (6) Each indication shall be located between the bottom of the crossing warning sign and the top of the supplemental downward diagonal arrow plaque.
- (7) All exposed hardware shall be anti-vandal.
- (8) All individual components of the system shall be replaceable to allow for easy field repair and maintenance.
- (9) To minimize excessive glare during nighttime conditions, an automatic signal dimming device should be used to reduce the brilliance of the RRFB indications during nighttime conditions.

#### **B.2 Sign**

- (1) All signs are existing to be moved and are shown on the signing plan.

### **B.3 Control Circuit**

- (1) The control circuit shall have the capability of independently flashing up to two independent outputs. The LED light outputs and flash pattern shall be FHWA approved and engineer programmed.
- (2) The controller shall be one of the following:
- web enabled to allow for remote programming and system diagnostics. Including flash time, flash pattern and report system information, such as battery voltage, and temperature.
  - on-board user interface that provides system diagnostics and allows system setting changes
  - Approved equal
- (3) The flashing output shall have 75 flashing sequences per minute during each 800 millisecond flashing sequence, the left and right RRFB indications shall operate using the following sequence:
- The RRFB indication on the median side shall be illuminated for approximately 50 milliseconds.
  - Both RRFB indications shall be dark for approximately 50 milliseconds.
  - The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds.
  - Both RRFB indications shall be dark for approximately 50 milliseconds.
  - Both RRFB indications shall be illuminated for approximately 50 milliseconds.
  - Both RRFB indications shall be dark for approximately 50 milliseconds.
  - The RRFB indications for the advance RRFB shall be illuminated for approximately 50 milliseconds.
  - RRFB indications shall be dark for approximately 50 milliseconds.
- (4) Flash rates with the frequencies of 5 to 30 flashes/second shall not be used to avoid inducing seizures.
- (5) The control circuit shall be installed in an IP67 NEMA rated enclosure or NEMA 3R.
- (6) All circuit connectors shall conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 3 feet deep for 30 minutes. Connectors shall be Deutsch DTM series, Carmanah RRFB or approved equal
- (7) All individual components of the system shall be replaceable to allow for easy field repair and maintenance.

### **B.4 Beacon Operation:**

- (1) The RRFB shall be normally dark, shall initiate operation only upon pedestrian actuation, and shall cease operation at a predetermined time after the pedestrian actuation or, with passive detection, after the pedestrian clears the crosswalk.
- (2) All RRFB units associated with a given crosswalk (including those with an advance crossing sign, if used) shall, when actuated, simultaneously commence operation of their rapid-flashing indications and shall cease operation simultaneously.
- (3) If pedestrian pushbutton detectors (rather than passive detection) are used to actuate the RRFB indications, a Push Button To Turn On Warning Lights (R10-25) sign shall be installed explaining the purpose and use of the pedestrian pushbutton detector. See signing plan
- (4) The duration of a predetermined period of operation of the RRFBs following each actuation should be based on the procedures provided in Section 4E.06 of the 2009 MUTCD for the timing of pedestrian clearance times for pedestrian signals.
- (5) The predetermined flash period shall be immediately initiated each and every time that a pedestrian pressing a pushbutton detector
- (6) A small pilot light may be installed integral to the RRFB or pedestrian pushbutton detector to give confirmation that the RRFB is in operation.

### **B.5 Battery**

- (1) The Battery shall be a 12VDC Absorbed Glass Mat (AGM) sealed lead-acid, maintenance-free battery.
- (2) The Battery shall be rated at 45AH minimum and shall conform to Battery Council International (BCI) specifications or battery system that is 14Ah or 48AR Gel Battery and is suitable for usage model and system autonomy requirements or approved equal.
- (3) All batteries shall be sealed in a plastic film to provide moisture and corrosion resistance.
- (4) The Battery shall have a minimum operating temperature range of -76° to 140°F (-60° to 60°C).
- (5) All battery connectors shall conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 3 feet deep for 30 minutes. Connectors shall be Deutsch DTM series or approved equal
- (6) The Battery shall be solar-charged with a capacity up to 30 days of autonomy without sunlight, varying with ambient temperature and number of activations. Solar calculations shall be provided.

## **B.6 Wireless Radio**

- (1) Radio control shall operate on 900 MHz frequency hopping spread spectrum network or 2.4 GHz ISM band mesh network radio
- (2) Radio shall integrate with communication of RRFB system control circuit to activate light indications from pushbutton input.
- (3) The Radio shall synchronize all of the remote light indications so they will turn on within 120 msec of each other and remain synchronized through-out the duration of the flashing cycle.
- (4) Radio systems shall operate from 3.6 vdc to 15vdc
- (5) The Radio unit shall have an LCD display to program flash time and communicate system information, such as battery voltage, battery temperature and solar charge level an onboard diagnostics.
- (6) All individual components of the system shall be replaceable to allow for easy field repair and maintenance.

## **B.7 Pushbutton**

- (1) The pushbutton shall be capable of continuous operation over a temperature range of -30 degrees F to 165 degrees F (-34 degrees C to 74 degrees C).
- (2) Pushbutton shall be ADA compliant.
- (3) Pushbutton facing sidewalk area that is accessible to wheelchair person

## **B.8 Solar Panel**

- (1) The Solar Panel shall provide a minimum of 10 watts and maximum of 55 watts at peak total output or approved equal.
- (2) The Solar Panel shall be affixed to an aluminum plate and bracket, at minimum angle of 45 degrees to allow for maximum solar collection and optimal battery strength or approved equal.
- (3) The Solar Panel Assembly (panel, plate and bracket) shall be mounted on a pole cap mount or aluminum mounting bracket, to allow for maximum solar collection and optimal battery strength or approved equal.
- (4) The Solar Panel shall have a minimum operating temperature range of -40° to 185°F (-40° to 85°C).

## **B.9 Pedestal Shaft**

- (1) Shall meet the requirements as set forth in section 657.2.4 of the standard specifications for highway and structure construction.
- (2) Shall be a standard 4.5" OD aluminum pedestal pole. Supplied with one end threaded for easy installation into a pedestal base.
- (3) Shall be a 13' Schedule 80 pipe raw aluminum
- (4) Incidental to RRFB
- (5) See signing plan for locations

## **B.10 Pedestal Base**

- (1) Shall meet the requirements as set forth in section 657.2.5 of the standard specifications for highway and structure construction.
- (2) The pedestal base shall be a cast aluminum pedestals mount on a concrete base attached by four internal anchor bolts imbedded in the base.
- (3) The Base shall have a large 8.5" square hand hole cover allowing access to the interior of the base.
- (4) Incidental to RRFB

#### **B.11 Concrete Base**

- (1) Shall meet the requirements as set forth in section 654.2.1 of the standard specifications for highway and structure construction, as applicable.
- (2) The concrete base shall be a Type 1 base (WisDOT bid item 654.0101) or approved equivalent.
- (3) Incidental to RRFB

#### **B.11 Anchor Bolts**

- (1) The anchor bolts shall be galvanized steel 1" x 42".
- (2) Set of 4 includes lock washer and nut.
- (3) Incidental to RRFB

### **C Construction**

The RRFB system will consist of multiple assemblies to be constructed by the contractor as shown on the plans.

There are two back to back existing RRFB's (one EB and one WB). Remove and reinstall in the same location following construction the EB and WB right RRFB assemblies. A new back to back RRFB assembly shall be furnished for the median with a new pedestal shaft and base and footing as per the specifications above shall be furnished. Contractor may reuse the existing back side RRFB's and signs. The existing advanced RRFB's at station 1040+50 WB and 1018+50 EB shall be interconnected by wireless to the RRFB's at the crossing. When the button is pushed at the crossing it shall activate the RRFB in advance on STH 50.

### **D Measurement**

The department will measure Moving and New Rectangular Rapid Flashing Beacon System Station 1018+50 EB Right, Station 1026+00 EB Right, Station 1026+30 WB Right, Station 1026+25 Median, and Station 1040+50 WB Right by the 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.0060.28 | Moving and New Rectangular Rapid Flashing Beacon System STH 50 at 248 <sup>th</sup> Avenue Station 1018+50 EB Right | EACH |
| SPV.0060.29 | Moving and New Rectangular Rapid Flashing Beacon System STH 50 at 248 <sup>th</sup> Avenue Station 1026+00 EB Right | EACH |
| SPV.0060.30 | Moving and New Rectangular Rapid Flashing Beacon System STH 50 at 248 <sup>th</sup> Avenue Station 1026+30 WB Right | EACH |
| SPV.0060.31 | Moving and New Rectangular Rapid Flashing Beacon System STH 50 at 248 <sup>th</sup> Avenue Station 1026+25 Median   | EACH |
| SPV.0060.32 | Moving and New Rectangular Rapid Flashing Beacon System STH 50 at 248 <sup>th</sup> Avenue Station 1040+50 WB Right | EACH |

Payment is full compensation for providing and installing a fully operational RRFB system consisting of multiple assemblies.

## **68. Rectangular Rapid Flashing Beacon System STH 50 at 242<sup>nd</sup> Avenue Station 1043+45 EB Right, Item SPV.0060.33; Station 1047+80 Median Back to Back, Item SPV.0060.34;**

**Station 1047+60 EB Right, Item SPV.0060.35; Station 1047+80 WB Right, Item SPV.0060.36; Station 1052+00 WB Right, Item SPV.0060.37.**

**A Description**

This work shall consist of furnishing and installing a solar powered rectangular rapid flashing beacon (RRFB) system consisting of multiple assemblies as described herein and as shown in the plans. Each assembly shall be solar powered and pedestrian activated. The assemblies shall be wirelessly controlled and multiple units shall be synchronized. This specification is in accordance with requirements contained in FHWA interim approval 1A-21 dated March 20, 2018 for flashing requirements and beacon operation.

**B Materials**

Furnish a RRFB system with multiple assemblies. Each assembly may consist of, but not limited to, light indications, and electrical components (wiring, solid-state circuit boards, etc). An assembly may include the following items:

**B.1 Light Indications**

- (1) Each indication shall be a minimum size of 7" wide x 3" high with 8 high power LEDs
- (2) Two indications shall be installed on an assembly facing in the direction of approaching vehicular traffic. The two indications shall be aligned horizontally, with the longer dimension of the indication horizontal, and a minimum space between the two indications of approximately 7" measured from inside edge of one indication to inside edge of second indication.
- (3) A 6 LED or approved equal indication shall be installed on an assembly facing in the direction of approaching pedestrian traffic to serve as a confirmation for the pedestrian that the system has been activated.
- (4) The outside edges of the two indications, including any housing, shall not protrude beyond the outside edges of the integral signage of the assembly.
- (5) The light intensity of the indications shall be certified to meet the minimum specifications of the Society of Automotive Engineers (SAE) standard J595 Class 1(Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated January 2005 and be available upon request
- (6) Each indication shall be located between the bottom of the crossing warning sign and the top of the supplemental downward diagonal arrow plaque.
- (7) All exposed hardware shall be anti-vandal.
- (8) All individual components of the system shall be replaceable to allow for easy field repair and maintenance.
- (9) To minimize excessive glare during nighttime conditions, an automatic signal dimming device should be used to reduce the brilliance of the RRFB indications during nighttime conditions.

**B.2 Sign**

- (1) All signs shall be supplied and installed under a separate bid item. However, the assemblies must be constructed to allow the appropriate space for the installation of the signs in the field.

**B.3 Control Circuit**

- (1) The control circuit shall have the capability of independently flashing up to two independent outputs. The LED light outputs and flash pattern shall be FHWA approved and engineer programmed.
- (2) The controller shall be one of the following:
  - web enabled to allow for remote programming and system diagnostics. Including flash time, flash pattern and report system information, such as battery voltage, and temperature.
  - on-board user interface that provides system diagnostics and allows system setting changes
- (3) The flashing output shall have 75 flashing sequences per minute during each 800 millisecond flashing sequence, the left and right RRFB indications shall operate using the following sequence:
  - The RRFB indication on the median side shall be illuminated for approximately 50 milliseconds.
  - Both RRFB indications shall be dark for approximately 50 milliseconds.

- The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds.
  - Both RRFB indications shall be dark for approximately 50 milliseconds.
  - Both RRFB indications shall be illuminated for approximately 50 milliseconds.
  - Both RRFB indications shall be dark for approximately 50 milliseconds.
  - The RRFB indications for the advance RRFB shall be illuminated for approximately 50 milliseconds.
  - RRFB indications shall be dark for approximately 50 milliseconds.
- (4) Flash rates with the frequencies of 5 to 30 flashes/second shall not be used to avoid inducing seizures.
  - (5) The control circuit shall be installed in an IP67 NEMA rated enclosure or NEMA 3R.
  - (6) All circuit connectors shall conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 3 feet deep for 30 minutes. Connectors shall be Deutsch DTM series, Carmanah RRFB or approved equal
  - (7) All individual components of the system shall be replaceable to allow for easy field repair and maintenance.

#### **B.4 Beacon Operation:**

- (1) The RRFB shall be normally dark, shall initiate operation only upon pedestrian actuation, and shall cease operation at a predetermined time after the pedestrian actuation or, with passive detection, after the pedestrian clears the crosswalk.
- (2) All RRFB units associated with a given crosswalk (including those with an advance crossing sign, if used) shall, when actuated, simultaneously commence operation of their rapid-flashing indications and shall cease operation simultaneously.
- (3) If pedestrian pushbutton detectors (rather than passive detection) are used to actuate the RRFB indications, a Push Button To Turn On Warning Lights (R10-25) sign shall be installed explaining the purpose and use of the pedestrian pushbutton detector. Additional signage will be shown on the signing plans and paid for under using standard signing bid items.
- (4) The duration of a predetermined period of operation of the RRFBs following each actuation should be based on the procedures provided in Section 4E.06 of the 2009 MUTCD for the timing of pedestrian clearance times for pedestrian signals.
- (5) The predetermined flash period shall be immediately initiated each and every time that a pedestrian pressing a pushbutton detector
- (6) A small pilot light may be installed integral to the RRFB or pedestrian pushbutton detector to give confirmation that the RRFB is in operation.

#### **B.5 Battery**

- (1) The Battery shall be a 12VDC Absorbed Glass Mat (AGM) sealed lead-acid, maintenance-free battery.
- (2) The Battery shall be rated at 45AH minimum and shall conform to Battery Council International (BCI) specifications or battery system that is 14Ah or 48AR Gel Battery and is suitable for usage model and system autonomy requirements or approved equal.

All batteries shall be sealed in a plastic film to provide moisture and corrosion resistance.

- (3) The Battery shall have a minimum operating temperature range of -76° to 140°F (-60° to 60°C).
- (4) All battery connectors shall conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 3 feet deep for 30 minutes. Connectors shall be Deutsch DTM series or approved equal
- (5) The Battery shall be solar-charged with a capacity up to 30 days of autonomy without sunlight, varying with ambient temperature and number of activations. Solar calculations shall be provided

#### **B.6 Wireless Radio**

- (1) Radio control shall operate on 900 MHz frequency hopping spread spectrum network or 2.4 GHz ISM band mesh network radio
- (2) Radio shall integrate with communication of RRFB system control circuit to activate light indications from pushbutton input.
- (3) The Radio shall synchronize all of the remote light indications so they will turn on within 120 msec of each other and remain synchronized through-out the duration of the flashing cycle.
- (4) Radio systems shall operate from 3.6 vdc to 15vdc
- (5) The Radio unit shall have an LCD display to program flash time and communicate system information, such as battery voltage, battery temperature and solar charge level an onboard diagnostics.6. All individual components of the system shall be replaceable to allow for easy field repair and maintenance.

## **B.7 Pushbutton**

- (1) The pushbutton shall be capable of continuous operation over a temperature range of -30 degrees F to 165 degrees F (-34 degrees C to 74 degrees C).
- (2) Pushbutton shall be ADA compliant.
- (3) Pushbutton facing sidewalk area that is accessible to wheelchair person

## **B.8 Solar Panel**

- (1) The Solar Panel shall provide a minimum of 10 watts and maximum of 55 watts at peak total output or approved equal.
- (2) The Solar Panel shall be affixed to an aluminum plate and bracket, at minimum angle of 45 degrees to allow for maximum solar collection and optimal battery strength or approved equal.
- (3) The Solar Panel Assembly (panel, plate and bracket) shall be mounted on a pole cap mount or aluminum mounting bracket, to allow for maximum solar collection and optimal battery strength or approved equal.
- (4) The Solar Panel shall have a minimum operating temperature range of -40° to 185°F (-40° to 85°C).

## **B.9 Pedestal Shaft**

- (1) Shall meet the requirements as set forth in section 657.2.4 of the standard specifications for highway and structure construction.
- (2) Shall be a standard 4.5" OD aluminum pedestal pole. Supplied with one end threaded for easy installation into a pedestal base.
- (3) Shall be a 13' Schedule 80 pipe raw aluminum
- (4) Incidental to RRFB
- (5) See signing plan for locations

## **B.10 Pedestal Base**

- (1) Shall meet the requirements as set forth in section 657.2.5 of the standard specifications for highway and structure construction.
- (2) The pedestal base shall be a cast aluminum pedestals mount on a concrete base attached by four internal anchor bolts imbedded in the base.
- (3) The Base shall have a large 8.5" square hand hole cover allowing access to the interior of the base.
- (4) Incidental to RRFB

## **B.11 Concrete Base**

- (1) Shall meet the requirements as set forth in section 654.2.1 of the standard specifications for highway and structure construction, as applicable.
- (2) The concrete base shall be a Type 1 base (WisDOT bid item 654.0101) or approved equivalent.
- (3) Incidental to RRFB

## **B.12 Anchor Bolts**

- (1) The anchor bolts shall be galvanized steel 1" x 42".
- (2) Set of 4 includes lock washer and nut.
- (3) Incidental to RRFB

### **C Construction**

The RRFB system will consist of multiple assemblies to be constructed by the contractor as shown on the plans.

The RRFB at station 1043+45 EB and at Station 1052+00 WB in advance of the crossing shall be interconnected by wireless to the RRFB's at the crossing. When the button is pushed at the crossing it shall activate the RRFB in advance on STH 50.

### **D Measurement**

The department will measure Rectangular Rapid Flashing Beacon System Station 1043+45 RT, Station 1047+80 Median Back to Back, Station 1047+60 RT, Station 1047+80 LT, and Station 1052+00 LT by the 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.0060.33 | Rectangular Rapid Flashing Beacon System STH 50 at 242 <sup>nd</sup> Avenue<br>Station 1043+45 EB Right            | EACH |
| SPV.0060.34 | Rectangular Rapid Flashing Beacon System STH 50 at 242 <sup>nd</sup> Avenue<br>Station 1047+80 Median Back to Back | EACH |
| SPV.0060.35 | Rectangular Rapid Flashing Beacon System STH 50 at 242 <sup>nd</sup> Avenue<br>Station 1047+60 EB Right            | EACH |
| SPV.0060.36 | Rectangular Rapid Flashing Beacon System STH 50 at 242 <sup>nd</sup> Avenue<br>Station 1047+80 WB Right            | EACH |
| SPV.0060.37 | Rectangular Rapid Flashing Beacon System STH 50 at 242 <sup>nd</sup> Avenue<br>Station 1052+00 WB Right            | EACH |

Payment is full compensation for providing and installing a fully operational RRFB system consisting of multiple assemblies.

### **69. Reconstructing Sanitary Manhole Covers, Item SPV.0060.38.**

Village of Paddock Lake to provide special provision prior to PS&E.

### **70. Adjusting Sanitary Manhole Covers, Item SPV.0060.39.**

Village of Paddock Lake to provide special provision prior to PS&E.

### **71. Reconstructing Water Valve Boxes, Item SPV.0060.40.**

Village of Paddock Lake to provide special provision prior to PS&E.

### **72. Adjusting Water Valve Boxes, Item SPV.0060.41.**

Village of Paddock Lake to provide special provision prior to PS&E.

### **73. Adjusting Water Service Boxes, Item SPV.0060.42.**

Village of Paddock Lake to provide special provision prior to PS&E.

**74. Relocating Sanitary Service Line, Item SPV.0060.43.**

Village of Paddock Lake to provide special provision prior to PS&E.

**75. Moving Fire Hydrants, Item SPV.0060.44.**

Village of Paddock Lake to provide special provision prior to PS&E.

**76. Concrete Curb & Gutter 12-Inch Type D, Item SPV.0090.01; Concrete Curb & Gutter 12-Inch Pan 24-Inch Type D, Item SPV.0090.02; Concrete Curb & Gutter 18-Inch Pan 24-Inch Type D, Item SPV.0090.03; Concrete Curb & Gutter 66-Inch Type A, Item SPV.0090.04; Concrete Curb & Gutter 4-Inch Sloped 72-Inch Type A, Item SPV.0090.05; Concrete Curb & Gutter 9-Inch Pan 18-Inch Type D, Item SPV.0090.06.**

**A Description**

This special provision describes constructing curb & gutter in accordance with section 601 of the standard specs and to the dimensions shown in the plan construction details.

**B Materials**

Furnish materials in accordance with section 601.2 of the standard specs.

**C Construction**

Construct in accordance with section 601.3 of the standard specs.

**D Measurement**

The department will measure Concrete Curb & Gutter 12-Inch Type D, Concrete Curb & Gutter 12-Inch Pan 24-Inch Type D, Concrete Curb & Gutter 18-Inch Pan 24-Inch Type D, Concrete Curb & Gutter 66-Inch Type A, Concrete Curb & Gutter 4-Inch Sloped 72-Inch Type A, and Concrete Curb & Gutter 9-Inch Pan 18-Inch Type D by the linear foot acceptably completed.

**E Payment**

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

| ITEM NUMBER | DESCRIPTION   | UNIT |
|-------------|---|------|
| SPV.0090.01 | Concrete Curb & Gutter 12-Inch Type D               | LF   |
| SPV.0090.02 | Concrete Curb & Gutter 12-Inch Pan 24-Inch Type D   | LF   |
| SPV.0090.03 | Concrete Curb & Gutter 18-Inch Pan 24-Inch Type D   | LF   |
| SPV.0090.04 | Concrete Curb & Gutter 66-Inch Type A               | LF   |
| SPV.0090.05 | Concrete Curb & Gutter 4-Inch Sloped 72-Inch Type A | LF   |
| SPV.0090.06 | Concrete Curb & Gutter 9-Inch Pan 18-Inch Type D    | LF   |

Payment shall be in accordance with section 601.5 of the standard specs.

**77. Parking Lot Curb, Item SPV.0090.07.**

**A Description**

This special provision describes constructing a non-standard curb in accordance with section 505 and 601 of the standard specs and to the dimensions shown in the plan construction details.

**B Materials**

Furnish concrete in accordance with section 601.2 of the standard specs.

Furnish reinforcement in accordance with section 505 of the standard specs.

**C Construction**

Construct in accordance with sections 505.3 and 601.3 of the standard specs.

**D Measurement**

The department will measure Parking Lot Curb by the linear foot acceptably completed.

#### **E Payment**

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

| ITEM NUMBER | DESCRIPTION      | UNIT |
|-------------|------------------|------|
| SPV.0090.07 | Parking Lot Curb | LF   |

Payment for parking lot curb is full compensation for foundation preparation; for providing materials including concrete, reinforcement, and expansion joints; for placing, finishing, protecting, and curing; for sawing joints; for constructing fractured fin surface treatment; and for all formwork necessary to complete construction.

Crack repair shall be in accordance with 416.5.2.

### **78. Wood Pedestrian Fence, Item SPV.0090.08.**

#### **A Description**

This special provision describes providing a wood fence as detailed in the plans in accordance with sections 615 of the standard specs

#### **B Materials**

Furnish treated timbers in accordance with section 615.2 except that timbers do not need to be treated with cold dip treatment as specified in section 615.2.6. All timbers shall be surfaced on all 4 sides (S4S). Timbers shall be treated in accordance with section 507.2.2.6. Cut timber ends shall be treated.

Furnish galvanized steel hardware in accordance with section 615.2.7.

#### **C Construction**

Construct as shown in the plans and in accordance with section 615.3. Drilling of breakaway holes in wood posts is incidental to construction of Wood Pedestrian Fence.

#### **D Measurement**

The department will measure Wood Pedestrian Fence by the linear foot acceptably completed.

#### **E Payment**

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

| ITEM NUMBER | DESCRIPTION           | UNIT |
|-------------|-----------------------|------|
| SPV.0090.08 | Wood Pedestrian Fence | LF   |

Payment is full compensation for providing, hauling, and placing all timbers; treating cut timber ends; drilling breakaway holes in posts; and for providing and installing all hardware. The department will not pay for replacing damaged timbers.

### **79. Trench Drain 12-Inch, Item SPV.0090.09.**

#### **A Description**

This special provision describes providing a 12 inch wide longitudinal trench drain as shown in the plan construction details and in accordance with sections 416 and 611 off the standard specs.

#### **B Materials**

Furnish castings in accordance with section 611.2 of the standard specs. Trench drain shall consist of a solid cast iron frame with a cast iron grate in accordance with the dimensions provided in the plans. Trench drain frame shall have an outlet in the bottom of the trench drain capable of connecting to pipe underdrain unperforated 6-Inch.

Furnish concrete in accordance with section 416.2 of the standard specs.

#### **C Construction**

Construct trench drain in accordance with section 611.3 of the standard specs.

Construct concrete border around trench drain casting in accordance with section 416.3 of the standard specs.

**D Measurement**

The department will measure Trench Drain 12-Inch by the linear foot acceptably completed.

**E Payment**

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

| ITEM NUMBER | DESCRIPTION          | UNIT |
|-------------|----------------------|------|
| SPV.0090.09 | Trench Drain 12-Inch | LF   |

Payment is full compensation for providing materials including casting, concrete pavement, and masonry; for excavating and backfilling; for preparing the foundation; for cleaning out the structure after installation.

Connection of the trench drain to the nearest inlet shall be paid for separately using pipe underdrain bid items.

**80. Concrete Sidewalk 12-Inch, Item SPV.165.01.**

**A Description**

This special provision describes providing concrete sidewalk with a 12-inch thickness in accordance with section 602 of the standard specifications.

**B Materials**

Furnish concrete and other ancillary materials in accordance with section 602 of the standard specifications.

**C Construction**

Construct in accordance with section 602 of the standard specifications.

**D Measurement**

The department will measure Concrete Sidewalk 12-Inch by the square foot acceptably completed.

**E Payment**

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

| ITEM NUMBER | DESCRIPTION               | UNIT |
|-------------|---------------------------|------|
| SPV.0165.01 | Concrete Sidewalk 12-Inch | SF   |

Payment shall be in accordance with section 602.5 of the standard specifications.

**81. Construction Staking Sidewalk, Item SPV.0165.02.**

**A Description**

This special provision describes contractor-preformed construction staking to establish the horizontal and vertical position for sidewalk conforming to standard specs 105.6 and 650 and as follows.

**B (Vacant)**

**C Construction**

**C.1 General**

Use methods that conform to standard spec 650.3.

Maintain neat, orderly and complete survey notes and computations used in establishing the lines and grades. Make the survey notes and computations available to the engineer within 24 hours upon request as the work progresses.

**C.2 Sidewalk**

Place construction stakes for concrete sidewalk at intervals of 25 feet. A minimum of two stakes per cross section is required. Set and maintain as necessary additional stakes per cross section to achieve the required accuracy and to satisfy the method of operations. Set additional stakes as necessary to establish location and grade along intersecting road radii; and for auxiliary lanes. Locate all concrete sidewalk construction stakes to within 0.02 foot of the true horizontal position and establish the grade elevation to within 0.01 foot of the true vertical position.

#### **D Measurement**

The department will measure Construction Staking Sidewalk 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.0165.02 | Construction Staking Sidewalk | SF   |

Payment is full compensation for locating and setting all construction stakes and for relocating and resetting damaged or missing construction stakes. Standard spec 650.5.(2) applies for final payment.

SER-650-002 (20170622)

### **82. Wall Modular Block Gravity R-30-71, Item SPV.0165.03; Wall Modular Block Gravity R-30-73, Item SPV.0165.04.**

#### **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.

#### **B Materials**

##### **B.1 Proprietary Materials**

The supplied wall system must be from the department's approved list of Modular Block Gravity 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. See the approved products list titled "Proprietary Retaining Wall System Vendors." The name of the pre-approved proprietary wall system selected shall be furnished to the engineer within 25 days after the award of contract. The department also maintains a separate list of plants pre-approved by the department to provide wall facing units. See the approved products list titled "Precast Concrete and Block Fabricators." The identity of the plant manufacturing the facing units shall be furnished to the engineer at least 14 days prior to the project delivery.

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 closing 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:DOTDLStructuresFabrication@dot.wi.gov).

To be eligible to provide wall facing units for this project, a block manufacturing plant must be pre-approved by the Bureau of Technical Services and added to that list prior to the bid closing date. Information and assistance with the pre-approval process can be obtained by contacting the Bureau of Technical Services at the following email address: [DOTProductSubmittal@wisconsin.gov](mailto:DOTProductSubmittal@wisconsin.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 conforms to 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 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.

Walls shall be designed for a minimum live load surcharge of 100 psf in accordance with Chapter 14 of the WisDOT LRFD Bridge Manual or as shown 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 Ratio (CDR) for sliding, eccentricity, and bearing checks is provided 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. Internal stability shall also be considered at each block level. Calculations for factored stresses and resistances shall be based upon assumed conditions at the end of the design life. The width of the modular block (front face to back face) shall be included in the design computations and shown on the wall shop drawings. Blocks must have a minimum width of 8 inches. Block widths may vary among courses, but shall consist of only a single block. 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.

Wall facing units shall be designed in accordance with AASHTO LRFD 11.10.2.3.

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 leveling pad.

### **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 units shall consist of precast modular concrete blocks. Furnish concrete produced by a dry-cast or wet-cast process. Concrete for all blocks shall not contain less than 565 pounds of cementitious materials per cubic yard. The contractor may use cement conforming to standard spec. 501.2.1 or may substitute for portland cement at the time of batching conforming to standard spec. 501.2.6 for fly, 501.2.7 for slag, or 501.2.8 for other pozzolans. In either case the maximum total supplementary cementitious content is limited to 30% of the total cementitious content by weight.

Dry-cast concrete blocks shall be manufactured in accordance with ASTM C1372 and this specification.

All units shall incorporate a mechanism or devices that develop a mechanical connection between vertical block layers. Units that are broken, have cracks wider than 0.02" and longer than 25% of the nominal height of the unit, chips larger than 1", have excessive efflorescence, or are otherwise deemed unacceptable by the engineer, shall not be used within the wall. A single block front face style shall be used throughout each wall. The color and surface texture of the block shall be as given on the plan.

The top course of facing units shall be as noted on the plans, either:

- Solid precast concrete unit designed to be compatible with the remainder of the wall. The finishing course shall be bonded to the underlying facing units with a durable, high strength, flexible adhesive compound compatible with the block material.
- A formed cast-in-place concrete cap. A cap of this type shall have texture, color, and appearance, as noted on the plans. The vertical dimension of the cap shall not be less than 3 1/2 inches. Expansion joints shall be placed in the cap at a maximum spacing of 20 feet unless noted otherwise on the plan. 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 cast in place cap and coping concrete as specified in standard spec 716, Class II Concrete.

Block dimensions may vary no more than  $\pm 1/8$  inch from the standard values published by the manufacturer. Blocks must have a minimum width (front face to back face) of 8 inches. The minimum front face thickness of blocks shall be 4 inches measured perpendicular from the front face to inside voids greater than 4 square inches. The minimum allowed thickness of any other portions of the block is  $1\frac{3}{4}$  inches. The front face of the blocks shall conform to plan requirements for color, texture, or patterns.

If pins are used to align modular block facing units, they shall consist of a non-degrading polymer, or hot dipping galvanized steel and be made for the express use with the modular block units supplied, to develop mechanical interlock between facing unit block layers. Connecting pins shall be capable of holding the wall in the proper position during backfilling. Furnish documentation that establishes and substantiates the design life of such devices.

All block materials shall be furnished palletted and banded, with every pallet marked for quantity, lot number, lot size, manufacturing plant, and manufacturing date(s). Materials furnished loose or unmarked will be rejected. Rejected materials shall be removed from the project at no cost to the Department.

### B.3.1.1 Material Testing

Perform or procure quality control testing of project materials according to the following requirements:

| Test   | Method                                  | Requirement          |            |
|--|---|----------------------|------------|
|  |   | Dry-cast             | Wet-cast   |
| Compressive Strength (psi)   | ASTM C140 or<br>ASTM C39 <sup>[4]</sup> | 5000 min.            | 4000 min.  |
| Air Content (%)  | AASHTO T152 <sup>[4]</sup>              | N/A                  | 6.0 +/-1.5 |
| Water Absorption (%)   | ASTM C140 <sup>[3]</sup>                | 6 max.               | N/A        |
| Freeze-Thaw Loss (%)<br>40 cycles, 5 of 5 samples<br>50 cycles, 4 of 5 samples | ASTM<br>C1262 <sup>[1][2][3]</sup>      | 1.0 max.<br>1.5 max. | N/A        |

<sup>[1]</sup> Test shall be run using a 3% saline solution and blocks greater than 45 days old.

<sup>[2]</sup> Test results that meet either of the listed requirements for Freeze-Thaw Loss are acceptable.

<sup>[3]</sup> An independent testing laboratory shall control and conduct all sampling and testing under ASTM C140/Water Absorption and ASTM C1262. Prior to sampling, the manufacturer shall identify materials by lot. Five blocks per lot shall be randomly selected for testing. Solid blocks used as a finishing or top course shall not be selected. The selected blocks shall remain under the control of the person who conducted the sampling until shipped or delivered to the testing laboratory.

<sup>[4]</sup> The manufacturer may perform their own quality control testing under ASTM C140/Compressive Strength, ASTM C39, and AASHTO T152, if qualified for this work under the requirements for plant certification.

The contractor and fabricator shall coordinate with the independent testing agent (if used) to ensure that strength and air content samples can be taken appropriately during manufacturing. At the time of delivery of materials, furnish the engineer a certified report of test from an AASHTO-registered or ASTM-accredited independent testing laboratory for each lot furnished.

The certified test report shall include the following:

- Project ID
- Production process used (dry-cast or wet-cast)
- Name and location of testing facility
- Name of sampling technician
- Lot number, lot size, and date(s) of fabrication

Quality control testing of project materials shall be completed not more than 18 months prior to delivery. Lot size shall not exceed the maximum testing frequencies, which shall not exceed 5000 blocks for dry-cast blocks and the lesser of 150 CY or 1 day's production for wet-cast blocks. Test results will represent all blocks within the lot. Each pallet of blocks delivered shall bear lot identification information. Block lots that do not meet the requirements of this specification or blocks without supporting reports will be rejected and shall be removed from the project at no expense to the department.

Nonconforming materials will be subject to evaluation according to standard spec 106.5.

### **B.3.2 Leveling Pad**

Provide an unreinforced cast-in-place 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.

The minimum width of the concrete leveling pad shall be as wide as the proposed blocks plus 6-inches, with 6-inches of the leveling pad extending beyond the front face of the blocks. The minimum thickness of the leveling pad shall be 6-inches.

### **B.3.3 Backfill**

Furnish and place backfill for the wall as shown on the plans and as hereinafter provided.

Wall Backfill, Type A, shall comply with the requirements for Coarse Aggregate Size No. 1 as given in standard spec 501.2.5.4. All backfill placed within a zone from the top of the leveling pad to the top of the final layer of wall facing units and within 1 foot behind the back face of the wall shall be Wall Backfill, Type A. This includes all material used to fill openings in the wall facing units.

A layer of Geotextile Type DF Schedule B shall be placed vertically between the backfill and the Type A backfill. The geotextile shall extend from the top of the leveling pad to 6 inches below the surface of the retained soil. The geotextile shall then wrap across the top of the Type A backfill to the back of block wall facing.

Backfill placed between retained soil and Type A backfill shall comply with the requirements for Granular Backfill Grade 1 as contained in 209.2.2 of the standard spec. The Contractor may substitute Type A Backfill for Granular Backfill Grade 1.

## **C Construction**

### **C.1 Excavation and Backfill**

Excavation and preparation of the foundation for the wall and the leveling pad shall be in accordance to standard spec 206. 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. Backfilling shall closely follow erection of each course of wall facing units.

Conduct backfilling operations in such a manner as to prevent damage or misalignment of the wall facing units 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.

Do not operate tracked or wheeled equipment on the backfill within 3 feet from the back face of modular blocks. The engineer may order the removal of any large or heavy equipment that may cause damage or misalignment of the wall facing units.

## **C.2 Compaction**

Compact wall backfill Type A with at least three passes of lightweight manually operated compaction equipment acceptable to the engineer.

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 modular blocks.

## **C.3 Wall Components**

### **C.3.1 General**

Erect wall facing units and other associated elements according to the wall manufacturer's construction guide and to the lines, elevations, batter, and tolerances as shown on the plans. Center the initial layer of facing units on the leveling pad; then level them and properly align them. Fill formed voids or openings in the facing units with wall backfill, Type A. Remove all debris on the top of each layer of facing units, before placing the next layer of facing units.

Install all pins, rods, clips, or other devices used to develop mechanical interlock between facing unit layers in accordance with the manufacturer's directions.

### **C.3.2 Leveling Pad**

Provide an unreinforced cast-in-place concrete leveling pad as shown on the plans. Vertical tolerances shall not exceed 3/4-inch when measured along a 10-foot straight edge. Allow the concrete to set at least 12 hours prior to placing wall facing units.

The bottom row of wall facing units shall be horizontal and 100% of the unit surface shall bear on the leveling pad.

## **C.4 Geotechnical Information**

Geotechnical data to be used in the design of the wall is given on the wall plan. After completing wall excavation, notify the department and allow the Regional Soils Engineer two working days to review the foundation.

## **D Measurement**

The department will measure Wall Modular Block Gravity 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 measured quantities at the contract unit price under the following bid item:

| ITEM NUMBER | DESCRIPTION                        | UNIT |
|-------------|------------------------------------|------|
| SPV.0165.03 | Wall Modular Block Gravity R-30-71 | SF   |
| SPV.0165.04 | Wall Modular Block Gravity R-30-73 | 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.

### **83. Proof Rolling, Item SPV.0170.01.**

#### **A Description**

This special provision describes testing the stability of the compacted subgrade by rolling with a tri-axle dump truck and supplements section 205.3.13 of the Standard Specs.

#### **B Materials**

Fully load a tri-axle dump truck to within 3 tons of the vehicle legal load limits and provide a minimum gross vehicle weight of 30 tons. Uniformly inflate all tires to the pressure recommended by the tire manufacturer for the applicable wheel load.

#### **C Construction**

Completely compact and shape the subgrade to approximate grade. Test roll at normal walking speed at the direction of the engineer. Roll the subgrade across the entire roadway. Make multiple passes throughout the length of the test area.

Proof rolls shall only be conducted for areas specified for geogrid unless otherwise approved by the engineer

Proof rolls conducted without the direction of the engineer will not be paid for.

Do not proof roll while the subgrade is wet or while the subgrade is saturated enough that the strength of the soil is less than under normal conditions. The engineer shall make the final determination of when the subgrade is suitable for a proof roll.

Excavation below subgrade and backfill will be paid for using other bid items.

#### **D Measurement**

The department will measure Proof Rolling by the station acceptably completed. For divided roadways separate payment will be made for each roadway.

#### **E Payment**

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

| ITEM NUMBER | DESCRIPTION   | UNIT |
|-------------|---------------|------|
| SPV.0170.01 | Proof Rolling | STA  |

Payment is full compensation for providing a fully loaded tri-axle dump truck; for performing the proof roll; and for retesting as determined by the engineer.

### **84. Removal and Disposal of Invasive Plant Species, Item SPV.0170.02.**

#### **A Description**

This special provision describes removal of invasive plant species, including but not limited to Phragmites per the Invasive Species Identification, Classification, and Control Rule (Chapter NR 40, Wisconsin Administrative Code).

#### **B (Vacant)**

#### **C Construction**

The Wisconsin DNR Liaison will determine locations of invasive plant species.

##### **C.1 Removing and Disposing of Phragmites (Common Reed)**

Remove all phragmite plants from areas designated by the Wisconsin DNR Liaison. Removal of phragmites includes the entire plant and root system. Remove all existing topsoil and plant biomass from the area designated by the Wisconsin DNR Liaison. Topsoil and biomass removed from invasive plant areas shall be kept in a separate stockpile than topsoil intended for reuse on the project under the Salvaged Topsoil item.

All plants removed shall be disposed either on-site under a minimum of 5 feet of fill or plants shall be taken to a solid waste landfill. Transport of plants to any other location other than a licensed landfill shall require approval by the Wisconsin DNR. Disposal of plants under fill or at a licensed landfill shall occur within one day of removal.

## **C.2 404 Permit**

Areas of invasive species designated by the Wisconsin DNR liaison may be outside of wetland fill areas covered under the 404 permit. Excavation shall not be performed in those areas.

## **C.3 DNR Contact**

A minimum of two weeks prior to excavation within invasive plant species areas, contact the Wisconsin DNR for identification and delineation of invasive species in the field. The Wisconsin DNR contact is:

Benton Stelzel

141 NW Barstow St, Room 180

Waukesha, WI 53188

Phone: (262) 623-0194

Email: benton.stelzel@wisconsin.gov

## **D Measurement**

The department will measure Removal and Disposal of Invasive Plant Species by the station acceptably completed.

## **E Payment**

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

| ITEM NUMBER | DESCRIPTION                                    | UNIT |
|-------------|--|------|
| SPV.0170.02 | Removal and Disposal of Invasive Plant Species | STA  |

Payment is full compensation for removing, stockpiling, excavating, loading, hauling, and either on-site disposal or licensed landfill disposal of these invasive plants.

If invasive plants are removed by excavation methods, the department will pay for restoring topsoil under the Salvaged Topsoil or Topsoil items.

## **85. Joint and Crack Repair, Item SPV.0195.01.**

### **A Description**

This special provision describes providing HMA for Joint and Crack Repair in existing pavement as the plans show and as follows.

### **B Materials**

Furnish HMA pavement meeting the requirements for mixture LT or MT as specified in standard spec 465.2; except the engineer will not require the contractor to conform to the quality management program in 460.2.8. Furnish tack coat conforming to standard spec 455.2.5.

### **C Construction**

Clean out all joints and cracks removing all loose and spalled concrete and all HMA patches. Dispose of all material off the project. Place asphaltic tack coat in the void. Fill voids with HMA pavement and machine compact.

### **D Measurement**

The department will measure Joint and Crack Repair by the ton acceptably completed.

### **E Payment**

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

| ITEM NUMBER | DESCRIPTION            | UNIT |
|-------------|------------------------|------|
| SPV.0195.01 | Joint and Crack Repair | TON  |

Payment is full compensation for removing, cleaning, and properly disposing of all loose and spalled concrete and HMA patches; for providing and applying tack coat, and for providing, placing and compacting HMA pavement.

SER-460-001 (20170502)

**86. Vertically Extending Fire Hydrants, Item SPV.0200.01.**

Village of Paddock Lake to provide special provision prior to PS&E.