SP-230331
(New)

SPECIAL PROVISION
FOR
TEMPORARY TRAFFIC SIGNALS

Dubuque County
BRF-020-9(273)--38-31

Effective Date
October 21, 2025

THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

230331.01 DESCRIPTION

A. Section 2528 and 4189 of the Standard Specification, as modified by these special provisions, shall apply to this project. Temporary traffic signals and signs shall be installed in conformance with the "Manual on Uniform Traffic Control Devices."

B. These Special Provision cover the work described in the contract documents. This includes furnishing all labor, equipment, and materials, and performing all required operation to complete the work per the contract documents to provide, operate, and remove a fully operational and working temporary traffic signal system. Unless modified by the Special Provisions, all work, including equipment, material, and installation, shall be in accordance with the Standard Specifications.

C. The Contractor shall be responsible for ONE-CALL locates of any underground cables installed as part of the temporary traffic signal installation.

D. The Contractor shall notify the Engineer in writing of any discrepancy or ambiguity as to the intent or meaning of the contract documents or Special Provision before starting work on that area.

230331.02 MATERIALS

A. General.

1. Furnish control cabinet, signal controller, and control equipment. 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. Supply a controller capable of executing the timing program supplied in this contract for this temporary traffic signal. Test traffic signal control cabinets before installation. The Engineer may request timing interval changes during the project as required by construction or traffic conditions. Make Engineer-requested changes

within 24 hours.

2. Ensure that the signal controller is capable of operating with a non-intrusive detection system and emergency vehicle preemption (EVP) system. Furnish a NEMA monitor for the controller. Test the monitor with an automated programmed testing system. Test annually if used for more than one year. This test verifies that the monitor complies with the intersection requirements. Attach a copy of the monitor test report to the monitor and provide a copy to the authority having jurisdiction of the intersection.

3. Provide the temporary electrical service for temporary traffic signals according to the requirements of the applicable electrical utility. Provide an affidavit to the electrical utility in a timely manner so the electrical utility can schedule service turn on. If the control cabinet is not mounted on the electrical service pole, add a second electrical service disconnect to the outside of the control cabinet for the convenience of emergency personnel. If required, install the electrical service.

4. Provide equipment to establish detection zones as the temporary signal plans show. Submit a list of proposed equipment and locations to the Engineer for approval; do not install before the Engineer approves.

5. All materials shall comply with Section 4189 of the Standard Specifications, with the following modifications and additions.

B. Wood Poles Class 4

1. Furnish jack pine, Norway pine, or western red cedar poles conforming to ANSI O5.1.

2. Trim or shave poles by machine or hand to leave a smooth surfaced pole exterior

3. Use marking code letters to provide the minimum information as follows: supplier's name or trademark, plant location and year of treatment, code letters denoting the pole species and preservative used, and class numeral and pole length. The Engineer may refuse the pole upon inspection depending on the physical condition of the pole.

4. Burn above information legibly, permanently, and squarely on the face of each pole, 10 feet ±2 inches from the butt of each pole. Make these letters not less than 5/8 inch high.

5. Brand, hammer-stamp, or die-stamp these same four items into the bottom of each pole butt. Make these letters not less than 5/8 inch high. Attach a metal tag with these same four items to the wood pole.

6. Provide a definition sheet explaining code letters and numbers to the Engineer.

C. Cable

For traffic control cable, furnish 600-volt AC 14 AWG, solid copper conductor, according to IMSA 20-1.

D. Guy, Span, and Messenger Wire

Furnish 3/8 inch nominal diameter, 7-strand, galvanized steel wire conforming to ASTM A475, with a utility grade breaking strength of 15,400 pounds.

E. Guy, Span, and Messenger Wire Mounting Hardware

1. Furnish Engineer-approved hardware consisting of the following: machine bolts, 1 1/2-inch curved square washers, straight to angle thimbleye bolts, thimble eyenuts, angle thimbleye eyes, ovaleye bolts, standard eye nuts, twisted loop dead-end grips, 3 bolt guy clamps, bolted

deadends, serving sleeves, messenger hangers, drive hooks, sidewalk guy fittings, guy wire thimbles, guy strain insulators, guy safety markers, anchor bolts, guy adapters, expanding anchors, and screw anchors. Remove screw anchors upon completion.

2. Furnish 5/8 inch minimum diameter bolts with square nuts. For eye hardware, use dropforged steel. Use galvanized metal hardware.

3. For straight-line bolted deadends, furnish malleable iron with steel hardware and a minimum breaking strength of 11,500 pounds. Fasten to the span pole using an ovaleye bolt.

4. For twisted loop dead-end grips, furnish the same material as specified for Guy, Span, and Messenger Wire. Use grips with a nominal diameter of 3/8 inch that accommodate 7-strand wire and have a minimum breaking strength of 11,500 pounds.

5. Furnish 3 bolt guy clamps having a minimum breaking strength of 11,500 pounds.

6. For guy strain insulators, furnish ANSI class 54-2 insulators with maximum wire diameter of 1/2 inch and minimum tensile strength of 12,000 pounds.

7. Separate sidewalk guy fittings by no more than 6 feet of 2-inch rigid metallic galvanized conduit. Attach the pole plate to the pole with one 5/8 inch machine bolt and two 1/2-inch by 4-inch minimum lag bolts.

8. For guy safety markers, use yellow or orange plastic a minimum of 7 feet long.

9. For anchor bolts, furnish 5/8 inch minimum diameter rods with a minimum breaking strength of 11,500 pounds.

10. Use expanding anchors having a minimum expanded area of 125 square inches.

11. Use screw anchors having a minimum helix area of 78 square inches 10-inch diameter with a minimum rod diameter of 1 1/4 inches and 66 inches long.

F. Tether and Messenger Wire

Furnish 1/4-inch nominal diameter, 7-strand, galvanized steel tether wire conforming to ASTM A475 with common grade breaking strength of 1900 pounds.

G. Temporary Traffic Signal Control Cabinet Base

Furnish a 3/4 inch by 4-foot by 6-foot sheet of exterior grade plywood for the base. Provide wooden stringers 4-inch square by a specified length as needed. Seal bases to prevent rodents from entering the cabinets.

H. Control Cabinet Approval

1. Submit a certificate of compliance from the Contractor or company that wired the cabinet certifying that the cabinet and equipment conform to the contract. Submit copies to the Engineer.

2. Demonstrate to the Engineer that the installed controller is programmed and functions as designed, electronic components are in proper working condition, and the installation conforms to the contract.

I. Temporary Traffic Signals for Intersections

1. Furnish galvanized wire rope tether wire clips, drive hooks, serving sleeves.

2. Furnish only fittings designed for span wire mounting applications. The Contractor may also use these fittings for the tether wire connection, or the Contractor may use a tether clamp assembly. Use hardware of unpainted aluminum or that is yellow, AMS Standard 595A: AMS-STD 13538, in color. For traffic signal head mounting lock nuts, use 1 1/2 inch hexagon, galvanized malleable iron. Use nuts 1/2 inch thick and measuring 2 1/2 inches across flat to flat.

3. Use reinforcement plates, stiffener plates, or both, as the signal head manufacturer recommends.

230331.03 CONSTRUCTION

A. General.

Perform work according to the Wisconsin State Electrical Code. Provide and install wood poles, posts, tether wire, messenger wire, tether wire hardware, messenger wire hardware, guy wire, span wire, guy wire hardware, and span wire hardware, traffic signal cable, traffic signal faces mounting hardware, electrical service, traffic signal faces, traffic signal faces with backplates, including providing, installing, and programming the controller with control cabinet as the plans show.

B. Maintenance

1. Maintain minimum and maximum heights to the signal faces as the plans show. Verify the span heights throughout the project duration.

2. Place signal faces as the plans show. Make every effort to give maximum visibility to signals intended for view by the motoring public.

3. Provide a primary contact as well as a backup contact assigned to and qualified to maintain temporary traffic signals. Submit names, addresses, and telephone numbers of contact persons to the Engineer, local police, and county sheriff. Also post contact information on temporary traffic signal control cabinets and cover with weatherproof material. Ensure that a contact person is available 24 hours a day, 7 days a week, from the start of the project until the temporary traffic signal is not needed. Ensure that emergency calls are received by an individual and not by an answering machine.

4. Correct LED outages within 24 hours of the reported outage.

5. 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, controller, and cabinet accessories within 4 hours.

6. All far through indications suspended on the span wire must be located above the center of the controlled lane. The far right signal must be mounted over the center of the right through lane. The far left turn signals must be suspended straight ahead of the left turn lane.

C. Wood Poles, Class 4

1. The Contractor shall mark proposed pole locations after utility locates are completed. The Contractor shall notify the Engineer at least 5 working days before pole installation for field review.

2. Place the pole in the ground to no less than 1/5 of the pole’s length.

3. Remove loose materials from the hole before setting the pole. Tamp bank run gravel backfill every foot of fill. Before attaching span wires or messenger wires, rake poles one foot at the top of the pole and guy if needed.

4. Review the plans before pole installation to ensure adequate pole height.

D. Wire and Cable

1. Attach cables to the span wire or messenger wire, at 3 foot or less intervals with 4 wraps of a department-approved adhesive tape or UV resistant, outdoor rated nylon lock fasteners.

2. Install cable in continuous lengths without splices in any cable run. Only splice cable on the pole. If any opening in the insulation occurs other than the end of the wire or cable, replace the wire or cable.

3. Make splices using a twist locked, wire nut, type connection. Point the spliced conductors upward and cover with plastic. Place the splice a minimum of 11 feet above finished grade level.

4. If anticipating freezing weather during the term of this contract, use weatherproof splice boxes.

E. Temporary Traffic Signal Control Cabinet Base

1. Attach the plywood to the stringers with nails or lag bolts. If using lag bolts, countersink the washer and the bolt head flush with the plywood surface. Arrange stringers to be underneath all 4 sides of the cabinet.

2. Secure the cabinet base using an anchor mounted on each corner and make flush with the top of the temporary cabinet platform.

3. For anchors, use 4-inch by 4-inch wood post, or a galvanized 1 5/8 inch by 1 5/8 inch channel with a minimum length of 3 feet. Secure the anchors to the cabinet base with lag bolts.

4. Attach the plywood to the stringers with nails or lag bolts. If using lag bolts, countersink the washer and the bolt head flush with the plywood surface. Arrange stringers to be underneath all 4 sides of the cabinet.

5. Secure the cabinet base using an anchor mounted on each corner and make flush with the top of the temporary cabinet platform.

6. For anchors, use 4-inch by 4-inch wood post, or a galvanized 1 5/8 inch by 1 5/8 inch channel with a minimum length of 3 feet. Secure the anchors to the cabinet base with lag bolts.

F. Tether Wire Mounting Hardware

Form loops on the end of the tether wire, hook over drive hooks, and hold in place using wire rope tether clips. Secure loose tether wire ends using serving sleeves.

G. Tether Wire

1. Keep tether wire free of splices or kinks.

2. Install the tether wire at 17 feet to 19 feet over the roadway.

3. Install the tether wire in direct vertical alignment with the guy wire.

4. If no signal heads are attached between the span wire and tether wire, attach a tension control cable. Use the tension control cable to maintain minimum height. Use a tension control cable consisting of tether wire and wire rope tether wire clips. Use 1/4 inch galvanized U-bolts on both ends, top and bottom, of the tension control cable to prevent movement.

H. Wire and Cable

Ground metallic parts including span, tether, and guy wire with hardware, light arms and luminaires, splice boxes and pole guards. Ground each electrically isolated assembly at one end by mechanically attaching (lug or split bolt) the equipment-grounding conductor (No. 6 AWG stranded copper wire) that terminates at a 5/8 inch by 8 foot. grounding electrode installed at the wood pole base. For the equipment-grounding conductor use an exothermic weld or clamp to the grounding electrode. Ensure grounding hardware is UL or NRTL listed.

I. Span Wire

1. Install the span wires free of any splices or kinks. Install the span wire mounted signal faces so the bottom is a maximum of 19 feet above the roadway (minimum height is 17 feet). Compute the vertical height of the span wire on the span pole using the following formula: HD(0.05) + RC + HH = SH

2. HD equals the horizontal distance between the span poles.

3. RC equals the roadway clearance. If lowering the proposed roadway under the span wire, use minimum clearance over the roadway value.

4. HH equals the head length (height) including span wire mounting hardware.

5. SH equals the span wire height above the roadway.

6. To use the value SH from the formula, mark from the elevation of the roadway on the span pole and measure up the pole the distance SH from this mark. This is where the top span wire should dead end on the span pole.

7. Review the plans before pole installation to ensure adequate pole height due to grade changes.

J. Span Wire and Tether Wire Signal Head Mounting Hardware

1. Support each signal head by a span wire-mounting bracket and attach to the tether wire.

2. Feed span wire signals through the top span wire-mounting bracket. Provide sufficient cable slack to enable moving the signal head along the span as the Engineer directs. Neatly coil and attach the extra signal cable to the upper span wire until it is needed.

3. Mount the heads vertically and plumb.

K. Implementation and Removal

1. Before activating the temporary traffic signal, verify the signal indications and operation of the signal to the Engineer.

2. When detour is removed, remove signal cable and wires, wood poles, wood posts, control cabinet, control equipment, and other materials. Upon deactivation of the controller, call the electrical utility immediately for the temporary electrical service disconnect.

3. Immediately after removing the wood poles and wood posts, backfill the holes, compacting every 12 inches with Engineer-approved material.

230331.04 METHOD OF MEASUREMENT

Method of measurement for the temporary traffic signals bid item shall be per Section 2528 of the Standard Specifications.

230331.05 BASIS OF PAYMENT

Basis of payment for the temporary traffic signals bid item shall be per Section 2528 of the Standard Specifications.