

**Specification for Pedestal-Mounted Portable Traffic Control Signal Systems**

June 23, 2008

**1. Description**

This specification outlines the minimum requirements for pedestal-mounted portable traffic control signal systems used on public streets and highways within the Commonwealth of Pennsylvania.

**2. General Requirements**

**2.1 Publication 213.** Pedestal-mounted portable traffic control signal systems may be used for stationary, short-term operations in compliance with Department Publication 213. Pedestal-mounted portable traffic signal systems are not permitted for long-term operations. In addition to work areas, such systems may also be authorized for special events and applications that comply with the basic requirements outlined in Department Publication 213. Manufacturers shall advise users of their systems of these Department requirements and procedures.

**2.2 MUTCD.** Portable traffic control signal systems shall comply with Part 4 of the national Manual on Uniform Traffic Control Devices (MUTCD), including the physical display and operational requirements of a conventional traffic control signal.

**3. System Configuration**

Each pedestal-mounted portable traffic control signal system shall consist of a minimum of four units with a pedestal-mounted signal head on each unit.

**4. Pedestal Units**

**4.1 Structural Adequacy.** Each unit shall be structurally adequate to support all pedestal-mounted equipment. The units shall have adequate structural integrity to enable lifting and placing them as required.

**4.2 Stability.** The units shall be designed in a manner to provide acceptable stability and a suitable means for ballasting.

- 4.3 Assembly Mechanisms.** Each unit shall be equipped with solid rubber tires and retractable handles to facilitate deployment, relocation, and removal. Signal heads shall be mounted on a retractable vertical upright that is equipped with a manual hand crank. All assembly mechanisms shall be designed for simplicity and quick operation so that set up and take down time can be kept to a minimum, and so that they can be operated by one person.
- 4.4 Labels.** The manufacturer, serial number, and emergency phone number shall be permanently marked on each unit using a decal, metal plate, or other means suitable to the Department.

## **5. Signal Displays**

- 5.1 Vertical Clearance.** The bottom of the housing of a signal face that is not mounted over the roadway shall be at least 8 feet, but not more than 15 feet, above the sidewalk or, if there is no sidewalk, above the pavement grade at the center of the roadway.
- 5.2 Size and Orientation.** Each signal head shall be vertically-mounted and shall consist of indications that are 12 inches in diameter.
- 5.3 Signal Head Design.** Signal head housings shall be yellow, complying with Section 1104.06 of Department Publication 408. Signal heads shall have visors that are a minimum depth of 9.5 inches. All signal heads shall be equipped with backplates that extend at least 5 inches beyond each side of the signal face. All backplates and the inside of visors shall have a non-reflective black finish.
- 5.4 Approved Material Types.** All signal heads shall have light emitting diode (LED) modules. All LED modules and the signal housings that make up each signal head shall have a Sale or Provisional Certificate of Approval issued by the Department.
- 5.5 Supplemental Signal Indicator Lamps.** Provide these lamps on the backside of each unit so that there is a visual status of the signal indications.

## **6. Environmental Requirements**

The pedestal-mounted portable traffic control signal system shall operate acceptably over an ambient temperature range of minus 30° F to plus 165° F, and a relative humidity range of 0% to 95%.

## **7. Power Supply**

The pedestal-mounted portable traffic control signal system shall be battery-powered. The power supply shall be of sufficient capacity to power each unit for 7 days at 72° F without charging. Each unit shall be equipped with batteries and a battery charger capable of being used with a 110-volt power source. There shall be a visual display of the battery charge status. The batteries and battery charger shall be in a lockable, weatherproof compartment.

All locks for each unit in a system shall be keyed alike. The system shall also be capable of running via existing commercial power.

## **8. Communication**

All pedestal-mounted portable traffic control signal systems used for short-term operations must be interconnected via hardwire or wireless radio link to ensure fail-safe operation and proper functioning. The interconnected units shall function as a master/slave system. Radio communications shall conform to applicable FCC requirements.

## **9. Modes of Operation**

**9.1 Required Modes.** Each system shall be capable of operating via manually-controlled, fixed-time, traffic-actuated, and flashing modes.

**9.2 Manually-Controlled Operation.** Manual control shall be wireless remote. The manual control mode shall not allow the operator to interrupt any preprogrammed all-red clearance time in a manner that would create a conflict.

**9.3 Fixed-Time Operation.** The system shall be capable of accommodating a minimum of five timing patterns per 24-hour period.

**9.4 Traffic-Actuated Operation.** Use detection systems that have a Department Sale of Provisional Certificate of Approval, or that are otherwise acceptable to the Department.

**9.5 Flashing Operation.** The system shall be capable of both flashing red and flashing yellow operations.

**9.6 Preemption.** As an option, the system shall be capable of accommodating an optical, radio, and sound-based preemption system to provide a green indication for a properly-equipped, approaching emergency vehicle. Preemption equipment shall have a Sale or Provisional Certificate of Approval issued by the Department.

## **10. Timing Parameters**

**10.1 Programmable Timing Patterns.** The system shall allow users to program red, yellow, and green times in at least 1-second increments. Green times shall be programmable from 3 seconds to 250 seconds; yellow times from 1 second to 10 seconds; and red times from 1 second to 250 seconds. Operation in the traffic-actuated mode will require the ability to program maximum and minimum green times, and green time extensions.

**10.2 Minimum Number of Phases.** As a minimum, the system shall be capable of six-phase traffic signal operations.

**10.3 Manual Programming.** The system shall allow users the ability to program pre-selected timing patterns.

**10.4 Timing Algorithms.** If the system has software to automatically determine timing patterns based on certain input data, the manufacturer must submit a complete description of the logic behind the timing algorithm for the review and approval of the Department.

## **11. Conflict Monitoring**

The system shall be capable of preventing or detecting the display of conflicting signal indications in accordance with the conflict monitoring provisions of the NEMA Standards. For short-term operations, if a conflicting display is detected, the system shall cause the transfer of the signals to steady red or flashing red.

## **12. Training and Documentation**

The manufacturer shall provide training and documentation to users of the pedestal-mounted portable traffic control signal system. Documentation shall include manuals that describe system operation, service procedures, and parts. The manuals may be supplied in an electronic format. A copy of the documentation, along with a training outline and training materials, shall be submitted to the Department when seeking approval of the system in accordance with Section 13.

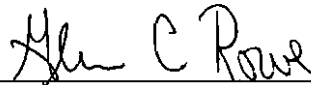
## **13. Approval Procedure**

**13.1 Certificate of Approval.** The complete pedestal-mounted portable traffic control signal system must have a Certificate of Approval issued by the Department prior to sale or use within the Commonwealth of Pennsylvania.

**13.2 Application.** Manufacturers that wish to have their product reviewed for possible approval should request an application from the Chief, Traffic Engineering and Operations Division, Bureau of Highway Safety and Traffic Engineering, Pennsylvania Department of Transportation, P.O. Box 2047, Harrisburg, Pennsylvania, 17105-2047.

**13.3 Product Demonstration.** As a part of the approval process, manufacturers will be required to demonstrate their pedestal-mounted portable traffic control signal system to Department representatives.

**13.4 30-Day Operational Test.** As a condition for approval, manufacturers will be required to have their pedestal-mounted portable traffic control signal system subjected to a 30-day operational test. The testing will be conducted by the Department, or may be conducted by an independent testing laboratory if approved by the Department. In order to be approved, the system shall perform acceptably for 30 consecutive days in accordance with this specification.



---

Glenn C. Rowe, P.E., P.T.O.E., Chief  
Traffic Engineering and Operations Division  
Bureau of Highway Safety and Traffic Engineering

S:\BHSTEM\TS-Congestion Management\Product Specifications\PTCS Spec – Pedestal-Mounted 06\_23\_08