Roadside Worker Safety

Prepared by:

Environmental Health and Safety

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Program # 2.3.9
1. **Purpose and Scope**

1.1. The purpose of this program is to ensure Boston University (BU) employees performing work on or in close proximity to roadways are properly equipped with high visibility safety apparel, warning devices, have the appropriate training and knowledge to properly plan for roadside work. This program ensures drivers are given sufficient advance warning of work areas where BU employees are performing roadside activities within the vicinity of the Boston University property.

2. **References**

2.1. **Regulations**

- ANSI/ISEA 107-2010 High Visibility Safety Apparel
- ANSI/ISEA 207-2006 High Visibility Public Safety Vests
- ANSI/ASSE 10.47 Work Zone Safety for Highway Construction
- 23 CFR 655 MUTCD Manual on Uniform Traffic Control Devices. Sections 6D.03 and 6E.02
- 23 CFR 634 FHWA – DOT Section 634.3

2.2. **Supplementary Documents**


3. **Definitions**
3.1. High Visibility Apparel

- **Class 1** apparel provides the minimum amount of required background material and reflective tape to differentiate the wearer from the work environment. It does not require a moving body part (i.e. arms or legs) to be part of the garment. A typical application is when the worker is well separated from the traffic, and the vehicle or equipment speeds are less than 25 mph such as in parking lot and warehouse environments. The Class 1 garment is typically a vest.

- **Class 2** apparel provides superior visibility for wearers by the additional coverage of the torso, and is more conspicuous than Class 1 apparel by requiring more material and tape. It does not require a moving body part to be included. The typical application for Class 2 is for workers on or near a roadway with a higher level of traffic and congestion and with traffic speeds of over 25 mph. This could apply to construction crews, utility and survey workers and traffic police. The Class 2 garment can be a vest, shirt or jacket.

- **Class 3** apparel offers greater visibility to the wearer in both complex backgrounds and through a full range of body movements. Garments have material and reflective tape on arms and/or legs. A sleeveless garment or vest alone cannot be considered a Class 3. This class would typically apply to those working in situations featuring higher traffic speeds (greater than 55 mph) and reduced sight distances. (Workers must be visible at a minimum distance of 1,280 feet). Class 3 would likely include highway workers, utility and survey crews and emergency response personnel.

- **Class E** apparel is not a required class. It includes bib overalls, pants, and shorts that meet required retro-reflective and background standards. However, Class E trousers or shorts can be worn with a Class 2 garment and the ensemble will be considered Class 3. Class E cannot be worn alone and meet any of the required classes.

3.2. Channelizing Devices - Cones, drums, and barricades that guide traffic away from the work area and into an appropriate path.

3.3. Short term construction work area – Maintenance or work lasting 8 hours or less.

3.4. Special Lighting Units (SLU) - Arrow boards that are a highly visible work zone warning device used when a lane is dropped and one lane must merge with another.

3.5. Warning sign - Provides directions to be alert to changes in the roadway and driving patterns. Signs are composed of black legends and borders on an orange background.

4. Roles & Responsibilities
4.1. **Employees.** Must protect themselves by being alert during work operations, wearing high visibility safety apparel and PPE, and by facing traffic whenever possible. The employee is responsible for PPE maintenance and reporting to their supervisor immediately when any PPE is lost or damaged. Employees shall don High Visibility Apparel prior to disembarking from any vehicle or entry upon any street, road, highway, alley or right of way where work activities and tasks near these roadways draw worker attention away from approaching vehicular traffic.

4.2. **FMP Managers** are responsible for the implementation of this program. Managers assigning roadside work are responsible for developing the work plan for a given assignment. A work plan will include the use of PPE, warning signs, channeling devices, and SLU’s as necessary. The FMP Manager is responsible for clearly communicating the plan which serves as training for the given assignment.

4.3. **Environmental Health and Safety (EHS)** is responsible for the development of this program and is available as requested to answer questions and provide guidance with its implementation.

5. **Special Requirements**

5.1. **Equipment and Supplies Required.** One or all of these may be employed depending on the roadwork to be conducted.

- High Visibility Safety Apparel
- Vehicle Mounted Arrow Board
- Temporary Traffic Control Zone Signs
- Channelizing Devices
- Work vehicles, known as a shadow vehicle, add protection when equipped with compliant beacons, flashing lights, flashing arrow panels, etc. and are positioned between workers and oncoming traffic. However, workers should not place themselves between two closely parked vehicles.

5.2. **Safety Requirements.**

- **All typical traffic control device setups illustrated should be considered as guides.** The traffic control devices shown, their arrangement, position, and distances prescribed in the tables are based on the 2009 edition Federal Highway Administration’s (FHWA) *Manual on Uniform Traffic Control Devices* (MUTCD).

- Only garments that comply with ANSI/ISEA 107-2010 and ANSI/ISEA 207-2006 shall be issued for wear by BU/BMC employees

5.3. **Training.**

- All BU employees involved with roadside work operations will be trained by their supervisor to the specific work to be conducted.
o Employees shall be instructed in the purpose, use, and care of high visibility garments.

o All employees whose work operations are or may be in an area where they are likely to perform tasks within a street, road, highway, or alley right of way shall be instructed about safe work procedures, and safe movement within a work zone.

o Additional retraining shall be conducted as necessary, or when a periodic inspection reveals, or there is a reason to believe, that there are deviations from or inadequacies in an employee's knowledge or use of these procedures.

5.4. **Personnel Protective Equipment (PPE).** High Visibility Safety Apparel, work gloves, hardhat, safety goggles. All PPE shall be worn and in place upon exiting any vehicle or approaching the assigned work area.

6. **Applicability.** Roadways, public and private maintained by Boston University at the Charles River and Medical Campus’s.

7. **Procedures and Instructions**

7.1. High visibility safety apparel provided shall remain on the wearer throughout the work day until the employee has completed all work assigned for the day at the site and is no longer performing any tasks within the right of way of a street, road, highway, alley or right of way. Temporary departures from, and return to, a site does not constitute completion of a work assignment nor warrant removal of a garment.

7.2. As a general rule, the closer the work area is to the roadway, the more the control devices needed. A plan shall be developed for each assignment with the following considerations before roadside work at Boston University can take place:

- **On or near the shoulder/edge of pavement.** This area should be signed as if work were on the road itself. Advance warning and operational signs are needed, as well as cones, reflectorized plastic drums, or temporary barricades to direct traffic and keep the work area visible to drivers.

- **On the median of a divided highway.** Work in this location may require traffic control for both directions of traffic, using advance warning and channelization devices if the median is narrow.

- **On the roadway.** This situation demands optimum protection for workers and maximum warning for motorists. Advance warning must provide general information that work is taking place, as well as information about specific hazards and specific actions the driver must take.

7.3. **Provide Advance Warning.** Warning devices on the approaches to a work area, alert drivers to a change in road and operating conditions. This is accomplished by using a series of signs installed in the same order as the driver generally would expect to see on long-term construction projects.
A minimum of three advance warning signs (the initial advance warning sign and two operational warning signs) is recommended when work is located on the traveled way.

The initial advance warning sign is usually a general warning such as “ROAD WORK”.

The next two operational warning signs provide the driver with more specific information about the situation. Advise and Direct Motorists. The two operational warning signs provide information such as special conditions to watch for, or actions to take. These include signs such as “SHOULDER WORK”, “RIGHT LANE ENDS”, “DETOUR 500 FT”, “ROAD CLOSED to THRU TRAFFIC”, “POLICE OFFICER AHEAD”, etc. All of these signs must be located far enough in advance of the work area that drivers have sufficient time to react to them appropriately. For Boston University projects see below for minimum sign spacing’s.

Minimum spacing for advance warning signs for urban roadways:
- Urban Low Speed (25-40) - 100 ft.
- Urban High Speed (45-55) - 350 ft.

7.4. Protect Motorists, Workers, and the Work Area. The primary protection of any work area is its own visibility. Traffic cones, temporary concrete barriers, reflectorized plastic drums, portable barricades, etc. are used to make the work area visible and to separate the workers from traffic. Other devices, such as flashing lights, flags, delineators, and portable changeable message signs (PCMS) can be used for additional emphasis and visibility.

7.5. Suggested Roadway Signage Configurations. See Appendix 1

8. Forms
N/A

9. Records Management

9.1. Work plans for specific road work may be maintained by FMP for future reference when planning projects.

10. SOP Revision History

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<td>N/A</td>
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Appendix 1.

Examples of possible lane closure configurations.
EMERGENCY RESPONSE INCIDENTS
SHOULDER / BREAKDOWN LANE
NO ENCROACHMENT OF ROADWAY

ANY ROADWAY

1. Activate hazard warning lights and flashers. Pull to the right edge of shoulder/breakdown lane before stopping.

2. Place traffic cones, 40' spacing between cones.

3. Remove object.

Note:
1. On hilly terrain, on sharp curves, in heavy traffic, or with high speed, cone spacing may be doubled to 80'.

2. Request additional assistance and/or traffic control devices if needed.

- Object or obstruction
- 28" minimum cones

EMERGENCY RESPONSE INCIDENTS
EMERGENCY RESPONSE INCIDENTS

MULTI LANE DIVIDED ROADWAY
(2, 3 OR 4 TRAVEL LANES)

1. Activate hazard warning lights and flashers. Pull vehicle over to left edge of median where present, or left edge of travel lane if no median is present. Before stopping.

2. Place traffic cones, 40' spacing between cones.

3. Move vehicle behind object.

4. Place additional cones.

5. Remove object.

NOTE:
1. On hilly terrain, on sharp curves, in heavy traffic, or with high speed, cone spacing may be doubled to 90'.

2. Request additional assistance and/or traffic control devices if needed.

- = Object or obstruction

0' = 28' minimum cones

10' TO 70'

240'

MEDIAN

SHOULDER

NOT TO SCALE (E-6)