WORK AREA PROTECTION

Workers must not only be protected from hazards on the project site and also from hazards generated by nearby operations. Members of the public passing near work areas must also be protected from any site-generated hazards. It is therefore important that all work areas be properly barricaded and posted with warning signs and that signals be used to control nearby vehicle traffic. In addition to the Federal Highway Administration's Manual of Uniform Traffic Devices (MUTCD) and OSHA, state and local agencies (NY City DOT Highway Rules) have specific requirements for work conducted in roadways or near pedestrian traffic.

- All work areas must be sufficiently barricaded to prevent unauthorized access and limit exposure of the public to work area hazards.
- **Pedestrian side** of work area shall be protected with solid barricades (Type II, positioned butt-to-butt) so that there is no space between barricades. (see exception attached)
- **Traffic Side Work Area Protection** – All barricades must conform to the crashworthiness requirements identified in the MUTCD. Minimum protection for the traffic side of worksite shall be protected with cones and rails. If front and rear are bordering only traffic, then cones and rail are acceptable.
- Type II barricades are to be used whenever **channeling pedestrian** traffic or when a side (front/rear) of the work area boarders a pedestrian walkway or pedestrian area.
- **When crosswalk, or other pedestrian path, is blocked** and pedestrians are provided an alternate route, the channelization of pedestrians must be performed with Type II barricades on both sides of path.
- When **channeling pedestrians off/on the sidewalk** at curb, a ramp must be must be provided. (At both points of on/off – if applicable). Curb is to be ramped with material that provide a smooth and slip resistant surface; and be a minimum of 4 feet wide. If the ramp is kept in place overnight, a pipe must be installed so as to allow rain water to flow uninterrupted along curb line.
- Caution, warning, and construction information traffic/pedestrian signs must be displayed in accordance with MUTCD. (i.e.- 'Work Zone", "Flagger ahead")
- Accident prevention signs (e.g., "Danger – Keep Out") must be visible when work is being performed and must be covered when hazards no longer exist.
- All signs must conform to the requirements specified by the MUTCD and OSHA and be used only for their intended purpose.
- Traffic signs must be placed appropriately to control vehicle traffic on or near project sites and must conform to applicable MUTCD and American National Standards Institute (ANSI) standards.
- Flaggers must be used to control vehicle and pedestrian traffic when signs, signals and barricades do not provide the necessary controls/protection.
- Only appropriately trained (card carrying) personnel may act as flaggers. Flaggers shall be properly trained in safe traffic control practices and public contact techniques in accordance with MUTCD (Part 6 – Chapter 6E). All trained flagger shall be listed in the competent person section (Section C) of this HASP.
- Flaggers and workers shall wear safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel" (see Section 1A.11) and labeled as meeting the ANSI107-1999 standard.

Patti Hinds

From: Donohue, Francis (Tim) <DONOHUEFR@coned.com>
Sent: Tuesday, February 7, 2017 12:46 PM
To: Patti Hinds
Cc: Galloway, Michael
Subject: RE: Substitution for Type II barricades

Patti

After speaking with Charlie Wissert and Bharat Mukhi, it was confirmed that Trimessine/Callahan Paving was given approval from Con Ed Construction EH&S to use the 36" cones with double rails (lower and upper cone toppers) as a substitute for the Type II barricades so long as the rails meet the minimum height requirement stated in the American with Disabilities Act (ADA).

Please keep a copy of this email in each HASP in the event that the use of cones and rails are questioned during a Con Edison audit.

Any questions, please do not hesitate to call.

Tim
Francis "Tim" Donohue
Senior Specialist - EH&S Engineering and Construction
Con Edison Co. of New York, Inc.
59-17 Junction Blvd
Corona, NY 11374
(917) 440-3061

From: Patti Hinds [mailto:PHinds@trimessine.com]
Sent: Tuesday, February 7, 2017 11:53 AM
To: Donohue, Francis (Tim)
Subject: HASP <External Sender>

Hi Tim,
Al told me we are waiting on something to put in our HASP about cone toppers being used in the place of barricades.
Can you please send the information so that I can send you our complete HASP for approval?
Thank you

Have a nice day,

Patti Hinds

conEdison

Work Area Protection and Traffic Control

Field Manual

THE WAY WE WORK IS SAFELY

To All Con Edison Field Forces:

This is your field manual on Work Area Protection and Traffic Control. It is designed to help you achieve a safe work area for our employees, with limited obstruction to traffic, through the use of uniform traffic control devices. In addition, it provides protection for pedestrians and motorists.

This edition has been updated to comply with the current *Manual on Uniform Traffic Control Devices* (MUTCD). It is based on three fundamental principles:

- Protection for you and your coworkers while you work.
- Protection for motorists and pedestrians;
- Safe and expeditious movement of traffic around your work area.

Not all work sites, traffic, or pedestrian situations can be illustrated in this manual. Employees must apply the principles and tools covered in this manual to set up work area protection and traffic control devices with all applicable traffic regulations in mind.

Table of Contents

Practical and Procedural Considerations 1

Because of the vital nature of our jobs, we must gain access to areas where repair, maintenance, and construction are required. Providing a work area that is safe for everyone is of critical importance.

Basic Principles of Work Area Protection

Traffic conditions in our operating area make it necessary to plan protection for work areas to avoid vehicular and pedestrian traffic hazards, and safeguard the public and our employees.

The work area protection that you set up at the job site has two main goals:

- To provide suitable work area devices so pedestrians and drivers of vehicles are aware of work area boundaries;
- To protect you and your co-workers while you work.

In addition, when planning work area setups, an important company concern is to maintain good relations with the public while maintaining safety in the work area. Employees in the field help create goodwill by the way they conduct themselves, and by the way they arrange and maintain their work areas.

Con Edison's reputation as a good neighbor is important. Do your part to preserve it by always using the work area protection principles described in this document when you are on the job.

Plan the Work and Work the Plan

In order to work efficiently and to minimize possible disruptions for pedestrians and vehicular traffic, it's important to prepare in advance before arriving at a work location. Here are some factors to consider:

Scheduling: When scheduling street work, try to avoid hours of unusually heavy traffic.

Permits: Review the work and Department of Transportation (DOT) permit requirements before planning work. Follow DOT stipulations.

Requirements include:

- *Posting of permits to face the nearest curb line at the work area setup. Posted permits must provide the following information: name of the contractor, start and expiration dates, contact telephone number, permit number, and type of work (gas, steam, or electric system). Lettering must be 1 1/2 inches high;*
- Determining days and times to perform work;
- Securing permission for lane closings.

Efficient Deployment: Maintain street work areas only for as long as is necessary. Move in quickly and safely, do the job, and move out. Minimize obstruction and excessive exposure to traffic.

Materials: Before leaving the yard, review work orders and make sure that all equipment and supplies are available to complete the job as promptly as possible.

Evaluate the Work Area

Determine how existing conditions will affect the job, and how work area protection must be adapted to the location. The following must be considered:

Vehicular Traffic:

- Assess the volume and speed of traffic.
- Arrange in advance with the appropriate authority to shut down a traffic lane when work must be done at approaches to and exits from tunnels and bridges.
- Allow for the free passage of emergency vehicles, including fire engines and ambulances.

Pedestrian Traffic: Observe the pedestrian routes to crosswalks and bus stops.

Changes in Work Plan: Reassess protective devices and working conditions based on any changes in the traffic patterns or scope of work that may occur during the work operation.

Business Establishments and Other Public Facilities: When excavations are to be made near schools, hospitals, theaters, or large business establishments, where there is substantial pedestrian and vehicular traffic, notify customers in advance so that they will be inconvenienced as little as possible.

Work Area Considerations

Use the following parameters in your planning so that the job setup can occupy the smallest work area consistent with safe operations:

Width of Work Area: Generally should not exceed the width of one traffic lane.

Where this is not possible (e.g., excavations, manholes between two lanes), doing the job in steps should be considered. In congested areas with unusual traffic conditions, notify the local police precinct.

Length of Work Area: Should be separated from oncoming traffic by placing a tool cart, Pel bag, vehicle, or other similar barriers between the working point and oncoming traffic. For increased protection, a buffer zone (the same width as the work area) should be located in front of the work area. The area in front of the buffer zone will be used to channelize and taper traffic flow away from the work area by using traffic cones and/or stanchions.

Mobilization:

1. Day or night, before moving out into traffic lanes, operate hazard lights on the vehicle. For tool carts, mount the directional arrow signs and appropriate advance-warning flasher; and use channelizing devices (traffic cones and/or stanchions), as well as the required warning signs.
2. Warn oncoming motorists during the move into traffic lanes. When necessary, a crew member equipped with a signaling device and wearing a retroreflective vest should warn oncoming motorists.
3. If a traffic light is present, wait for the light to change before mobilizing equipment in or out of traffic lanes.
4. Some operations require work vehicles to be positioned facing oncoming traffic. Maneuvering a vehicle into such a position can present a risk to workers, the vehicle, and the public, if it is not performed using good judgment and appropriate safety equipment, i.e., a hard hat, flag, and retroreflective clothing.
5. The vehicle's hazard lights must be in operation and visible to all approaching traffic during the maneuver until the vehicle is within a protected work area.
6. Select traffic-control devices to protect the work areas.

Following Through: Setting Up the Street Work Area

In creating the work area protection setup, these elements are a part of the job-site characteristics to consider and the tools to use.

Steps to follow for setting up work area:

- Wear proper PPE (traffic vests, hard hat).
- Dome light/flashers/arrow boards.
- Position vehicle upstream from work site to begin channeling traffic.
- Flaggers to warn traffic, when necessary.
- Place advance warning sign(s); sign is first.
- Begin laying down traffic devices (e.g., cones, stanchions), working your way down to the work site.
- Continue to channel traffic using cones; determine work site termination.
- Establish work site.
- Establish work site termination with cones (downstream).
- Establish pedestrian channeling, when necessary.

Personal Protective Equipment: Employees exposed to vehicular traffic, e.g., when setting up, maintaining, removing, or working outside of work area protection, must wear hard hats and retroreflective safety apparel.

Advance-Warning Signs: Remember – oncoming drivers must be able to see the work area if they are to avoid it. Therefore, night or day, arrange your traffic-warning equipment to provide advance warning to oncoming drivers. Channelizing devices tapered to move traffic away from the work area with a series of warning signs extended in the direction of oncoming traffic must be used.

Traffic Devices: Set up the selected devices to control vehicle and pedestrian traffic and protect the work area. Provide clearly defined boundaries of street and sidewalk work areas throughout the work operation day and night.

Intersections: At intersections, place the most effective warning equipment so that it faces the heaviest oncoming traffic. Set up traffic-control devices on alternate sides of an intersection to control flow around a work area.

Lamp Reels: When taking temporary service from a lamppost, cover the open door with a lamppost apron to protect exposed wiring. (Contractors are required to use generators to obtain power.) ALWAYS lay cord along the curb. AVOID laying cord diagonally across traffic lanes. If necessary, use an extra lamp reel. Use shunt boards to cover cord and hose that protrude into pedestrian walkways or traffic lanes.

Pedestrian Passageways: Minimum must be 5-feet-wide. Where required, protect pedestrian and bus-stop passageways with barricades, planking, steel plates, or shunt boards extending well beyond the defined passageway. Use signage to indicate alternate paths and access to bus stops.

Using Wheel Chocks at Worksites: All commercially plated vehicles must be chocked within the work area.

Note: The work zone is an area with construction, maintenance, or utility activity, including on company property.

All vehicles in work area up to 26,001 Gross Vehicle Weight Rating (GVWR) require **two** chocks (including tool carts and extra machines).

Vehicles with 26,001 Gross Vehicle Weight Rating (GVWR) or greater require **four** chocks.

Using Wheel Chocks on Flat Roads: Place one chock in front and behind one rear wheel. (For vehicles with four chocks, set up front and behind both rear wheels).

Using Wheel Chocks on Inclined Roads: For vehicles set up or parked facing uphill on a job site, place chocks behind rear wheels on both sides. (Rear of front tires are to be steered on an angle toward curb shoulder where applicable).

For vehicles set up or parked downhill on a job site, place all chocks in front of rear wheels. (Steer front tires on an angle toward the curb shoulder where applicable).

Emergency brake must be in place at all times when a vehicle is stationary at a work area. Also, chocks must make contact with tires leaving no gap space.

Hazard-Vehicle Lights: If a vehicle must stand in lanes of moving traffic for work purposes and is not within a protected work area, the hazard-vehicle light(s) must be in operation day and night.

Street Openings: If it is necessary to leave street work areas unattended at night, provide traffic-control devices to include use of Type III barricades around the work area to protect motorists and pedestrians.

Plating: Provide plating or decking when required. All road plates must be pinned and ramped to avoid pedestrian foot injury or injury to motorists due to plate movement.

Floodlights: When it is dark, and when using flaggers, use flood lamps where required for additional protective illumination or work illumination. Lamp glare should not impede motorists or workers.

Subsurface Structure Openings: When opening service valve castings S1, S2, S3, 32-inch cover, or 44-inch covers for any underground structures, manhole guardrails in conjunction with telescoping rails, must be in place to prevent pedestrians from falling into the structure, and to prevent debris or other materials from entering. In addition, you must follow the appropriate entry procedures for enclosed or confined spaces. Larger sub-surface structures require type 2 barricades to be installed.

Housekeeping: Good housekeeping is an important item in street work area protection.

Demobilization of the Job:

Steps to follow for breaking down work area:

- Wear proper PPE.
- Clean up work area.
- Break down work site.
- Pick up traffic devices in reverse order.
- Work your way back toward the Advance Warning sign.

Moving Out of the Work Area

- **A spotter or flag person is required to assist the movement of machinery and large mobile equipment (backhoe, excavator, dump trucks) when moving in and out of the work zone.**

Just as with setup of the work area, proper procedures must be observed when the job is finished and the site is being cleared.

Hazard-Vehicle Lights: Traffic-warning equipment and hazard-vehicle lights must be in operation while moving from traffic lanes to the curb.

Flagger: A trained member of the crew, wearing a retroreflective vest and hard hat, should warn oncoming motorists with a signaling device where necessary.

Traffic Controls: If a traffic light is present, wait for the red light before moving out of the traffic lane.

Plates: Ensure that all road plates are left pinned and ramped to maximize public safety.

Ongoing Work: If the job is shared by another Con Edison work area setup, make sure to leave the work area protection and the setup in good condition.

Housekeeping: Before leaving the area, inspect the site to be sure that no tools, equipment, or debris are left behind. Always work the job to make the public think well of you and the company. Remember, on the job, ***you are Con Edison***.

Advance-Warning Signage and Equipment for Work Area Protection

2

The purpose of advance warning is to properly alert motorists and pedestrians to physical conditions ahead.

Note: The advance-warning area may vary from a single sign to a series of signs in advance of the temporary traffic-control zone activity area.

Signage distances may be adjusted where necessary, depending on roadway limitations or for more effective warning and guidance.

Signage must effectively warn oncoming traffic, allowing adequate time for driver response. The employee must make the judgments necessary to establish and maintain effective advance warning.

Advance-Warning Signs

Description: Warning signs must have a black legend on an orange background and be retroreflective for nighttime use. Diamond-shaped warning signs are preferred. However, where necessary, the alternate rectangular shape may be used. Minimum sizes for warning signs are 30 inches by 30 inches (diamond); 36 inches by 36 inches for conventional roads, and 48 inches by 48 inches for freeway or expressways. Rectangle sign sizes are to be 24 inches by 18 inches for conventional roads, and 36 inches by 24 inches for freeways or expressways.

Signs Displaying the Symbol of a Worker or the Words "Road Work Ahead" or "Utility Work Ahead"

Instructions for Use: These signs are required to be posted for all work done in a traffic lane, parking lane, or on a shoulder. They must be posted first and in front of channelizing devices.

The sign displaying the symbol of a worker (the "worker symbol") may be used for short-duration work areas, while the "Road Work Ahead" and "Utility Work Ahead" signs are to be used for long-duration work areas (i.e., more than three days).

The sign may be mounted on portable "crashworthy" supports and must face oncoming traffic.

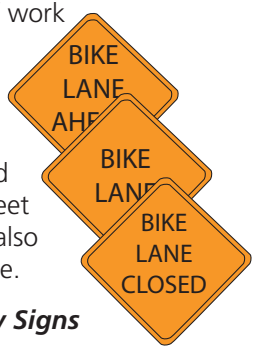
For short-duration work that occupies a location for up to three days, such as a manhole operation where workers are present or work in a parking lane, the standard distance between the warning sign and the lane closure or work area is 150 feet.

For long-duration work (more than three days), such as an excavation in a travel lane, the standard distance between the warning sign and the lane closure or work area is 300 feet.

Different distances may be used where necessary for more effective warning and guidance.

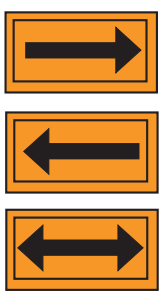
Bike Signs

"Bike Lane" signs are to be used when stipulated on the work permit issued by the city. If work is affecting a bike route/lane, a bike lane closed advance warning sign must be posted 350 feet and 200 feet prior to work, and also posted at work zone.



Directional-Arrow Signs

Description: Orange retroreflective background at least 48 inches by 24 inches for conventional roads, and 60 inches by 30 inches for expressway, with a clearly recognizable black arrow symbol. Standard or variable arrow signs (as shown) may be used.



Instructions for Use: The arrow board may be mounted on a vehicle, tool cart, barricade, or portable supports. It must be mounted at a minimum height of 1 foot to the bottom of the sign and must face in the direction of the oncoming traffic. The arrow must indicate the direction in which the traffic may pass.

Note: Arrow signs are intended to give motorists clear information and provide them with effective guidance. Therefore, care must be taken to ensure that the proper message is displayed at all times.

"Flagger Ahead" Signs

Description: The "Flagger Ahead" sign must be diamond shaped, minimum 30 inches by 30 inches, 36 inches by 36 inches conventional, 48 inches by 48 inches expressway, with a black legend and border on retroreflective orange background. It shows the silhouette of a person standing with the right arm (facing the viewer) extended horizontally and holding a flagstaff horizontally, with the flag hanging down. The free arm is shown bent with the palm above shoulder level.

Instructions for Use: The "Flagger Ahead" sign shall be placed after the worker symbol or "Road Work Ahead" or "Utility Work Ahead" sign and well before the flagging location.

Lane-Closure Signs

Description: Lane-closure warning signs must have a black legend and border on an orange retroreflective background.

Instructions for Use: Advance notice of closed lanes must be provided when work areas must interrupt the flow of traffic in through lanes. This sign should be placed after the worker symbol or "Road Work Ahead" sign and may be placed at the beginning of the taper created by the use of channelizing devices.

Road Closed Signs

Description: This is a horizontal rectangular white sign, 48 inches by 30 inches, with a black border and the words "Road Closed" in black on two lines.

Instructions for Use: The "Road Closed Ahead" sign should be used when the roadway is closed to all road users except contractors' equipment or officially authorized vehicles. This sign should be accompanied by appropriate warning and detour signage. This sign should be installed at or near the center of the roadway, on or above a Type III barricade that closes the roadway.

Note: New York City requires closed-street permits from the DOT. Both the police department and the fire department's communications center require notification 24 hours in advance of nonemergency street closings. The local community planning board requires a notification seven days in advance when closing more than 50% of moving lanes per direction. Westchester permits vary by municipality.

"Sidewalk Closed" Signs

Description: This device is used when a sidewalk must be closed in order to conduct work. This is a visual indicator to notify pedestrians that passage though this area is prohibited. Provisions must also be made to indicate redirection of pedestrian traffic.

Persons With Visual Disabilities

Adequate provisions, as determined by an engineering study or by engineering judgment, should be made for persons with visual disabilities. Because printed signs and surface delineations are not accessible to pedestrians with visual disabilities, blocked routes, alternate crossings, and sign and signal information should be communicated to pedestrians with visual disabilities by providing the following: audible information devices, accessible pedestrian signals, and barriers and channelizing devices that are detectable to pedestrians who have low vision or who are traveling with the aid of a long cane. The following three items should be considered when planning for pedestrians:

A. Pedestrians should not be led into conflicts with work site vehicles, equipment, and operations.

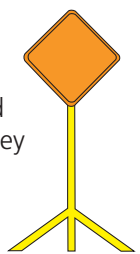
B. Pedestrians should not be led into conflicts with vehicles moving through or around the work site.

C. Pedestrians should be provided with a reasonably safe, convenient, and accessible path that replicates as nearly as practical the most desirable characteristics of the existing sidewalk(s) or foot path(s). Where pedestrians who have visual disabilities encounter work sites that require them to cross the roadway to find an accessible route, instructions

should be provided using an audible information device. Accessible pedestrian signals with accessible pedestrian detectors might be needed to enable pedestrians with visual disabilities to cross wide or heavily traveled roadways. A pedestrian route should not be severed and/or moved for nonconstruction activities, such as parking for vehicles and equipment.

High-Level Warning Devices

These devices are used in addition to signage. They can be lighted or unlighted as described below, and they provide clear, highly visible warning of the work area for both pedestrians and vehicles.



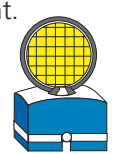
Flag Trees

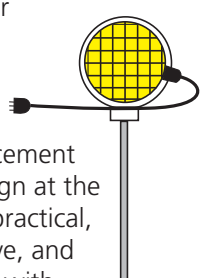
Description: The flag tree should display a minimum of two 16 inches by 16 inches flags with their lowest corners at a height of 8 feet. Other warning signs may be mounted below the flags to alert and warn traffic in advance of a work area during daylight hours.

Instructions for Use: At work areas where the placement of the advance-warning sign at the standard distances is not practical or is found to be ineffective, a flag tree may be used in conjunction with a worker symbol or road work ahead sign in advance of the work area (also in advance of any arrow boards) to effectively warn traffic. It must be placed at a sufficient distance in front of the work area to warn oncoming drivers.

Advance-Warning Flasher: Type B High-Intensity Flashing Warning Lights

Description: The high-intensity, warning light (Type B) provides a flashing yellow light in one direction only, for use both day and night. These lights can be mounted on traffic signs, or barricades to warn road users. These warning lights must be in accordance with current Institute of Transportation Engineers (ITE) "Purchase Specification for Flashing and Steady-Burn Warning Lights."





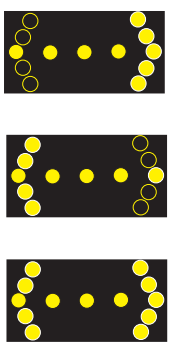
Instructions for Use: At work areas where the placement of the advance warning sign at the standard distances is not practical, or is found to be ineffective, and the advance-warning sign with flag tree is also found to be ineffective, the

advance-warning flasher may be used in conjunction with the advance-warning sign to provide additional warning to oncoming traffic. When mounted on an advance-warning sign, the distance from the roadway to the bottom of the lens of the light must not be less than 8 feet.

Note: The flag tree can be used in conjunction with the advance-warning sign during daylight hours and/or the advance-warning flasher during hours of darkness.

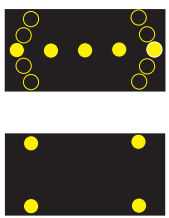
Flashing-Arrow Panel

Description: The unit must consist of a black rectangular background at least 4 feet wide and 2 feet high, with yellow flashing lights at least 4 inches in diameter, which form a clearly recognizable arrow symbol.



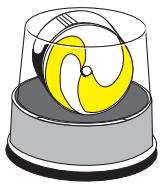
Instructions for Use: The unit may be mounted at a height of at least 7 feet from the bottom of the unit on a trailer or other suitable support. Vehicle-mounted panels should be as high as practicable. This sign can provide additional warning and directional information to assist in merging and controlling traffic around the work area.

If using an arrow panel, the arrow or chevron mode must be used for lane closures on multi-lane streets. If more than one lane is closed, a separate arrow panel must be used for each closed lane. The caution mode must be used in situations where one lane of a two-way street is closed. The caution mode may also be used for work (including surveying) done on shoulders and sidewalks near traffic situations.



Note: Arrow panels may be used in conjunction with warning signs. They may not be used to replace warning signs.

Hazard-Vehicle Light



Description: Vehicle-mounted, revolving (360 degrees) amber light.

Instructions for Use: The light must be displayed and be visible to all approaching traffic when the vehicle is operated at a work site in the roadway and the vehicle is not within a protected work area.

Work Area Protection

Work area protection involves the immediate area in which workers' activities are taking place. Consideration must be given to pedestrian and motorist protection. The work area is generally bordered by:

- Stanchions with telescoping rails and/or orange barrier tape, and/or
- Barricades Type I, Type II, or Type III.

Traffic-control devices, including channelizing devices, such as stanchions and cones, as well as sign supports and barricades, must conform to new requirements set by the National Cooperative Highway Research Program (NCHRP) Report 350, "Recommended Procedures for the Safety Performance of Highway Features," and are to be constructed of crashworthy materials.

Protection of Pedestrians

Traffic-control devices used to delineate pedestrian walkways must be crashworthy so that if struck by a vehicle, there will be a minimal threat to pedestrians, workers, and the occupants of vehicles.

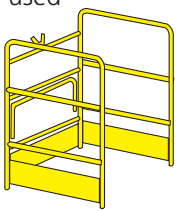
When existing pedestrian paths are disrupted or closed, alternate routes must be provided to crosswalks and bus stops. Signage may be provided to improve recognition of a temporary pedestrian route.

Stanchions with telescoping rails are to be used to channel pedestrians safely around the work area. Such barricades should be detectable to users of canes with a bottom rail no higher than 2 inches above ground, and a top rail at least 32 inches above ground.

If storing materials outside of the work area setup near pedestrian pathways (sidewalks and crossings), Type III barricades should be used to channel pedestrians safely around these storage areas.

Note: The devices must form a continuous barrier without any gaps between the devices.

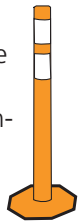
Subsurface Protection Devices



Description: Manhole guardrail and telescoping rails are used to prevent personnel, debris, tools and pedestrians from falling into subsurface structures and are not a traffic-control device. Manhole guardrails are yellow and equipped with three sides and two rails, plus a toe-board. The height of the top rail must not be less than 42 inches. Telescoping rails are mounted onto stanchions. The first rail is placed at the bottom of the stanchions and the second rail is secured at the top.

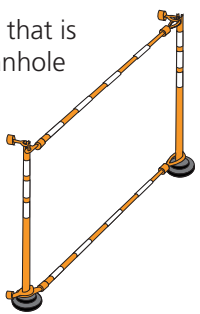
Instructions for Use: Manhole guardrails are to be used for open manholes. Manhole guardrails must be used for the following subsurface type of structure opening with type of covers: service valve castings, SI, S2, S3, 32-inch manhole cover, and 44-inch manhole cover. Larger subsurface structures require type 2 barricades.

Stanchions, Telescoping Rails, and Boundary Tape



Description: Stanchions must be crashworthy*, must consist of orange uprights at least 42 inches high with bases, and may be of a tubular or cone style. Each must have a minimum of two retroreflector bands near the top of the stanchion. The boundary tape is orange.

Instructions for Use: To outline the boundaries of street work areas such as:



- An open manhole that is protected by a manhole guardrail;
- Vault cage entry;
- Overhead pole work;
- Setup around Vactor/flush trucks.

* Temporary Traffic-Control (TTC) devices used to delineate a TTC zone pedestrian walkway must be crashworthy and, when struck by vehicles, present a minimum threat to pedestrians, workers, and occupants of impacting vehicles.

Barricades

Description: Barricades must be crashworthy and are of three types:

Type I – Has one rail that must be a minimum length of 2 feet and a width of 8 inches to 12 inches. Minimum height requirement is 36 inches.

Type II – Has two rails that must each be a minimum length of 2 feet and a width of 8 inches to 12 inches.

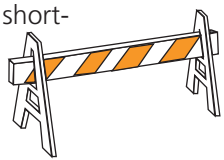
Type III – Has three rails that must each be a minimum length of 4 feet and a width of 8 inches to 12 inches. Minimum height requirement is 60 inches.

In addition, for all types:

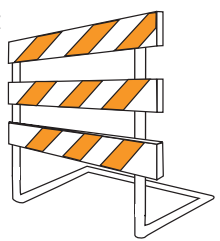
- Rails must be marked with alternate orange and white stripes at an angle of 45 degrees.
- Rails must be retroreflective for night use. And 270 square inches for freeways.

Instructions for Use: Barricades are used to mark an obstruction (work area) in the roadway and are required to outline excavations.

- The Type I barricade is used for temporary or short-duration work and for out lining excavations.



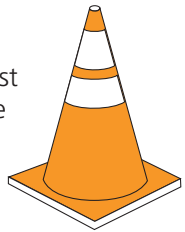
- The Type III barricade is normally used to face oncoming traffic for long-duration work where the barricade is to remain in the roadway for extended periods.



- Telescoping rails with stanchions are to be used to channel pedestrians safely around the work area. Type II or Type III barricades may be used at pedestrian crossings, as well as at sidewalks or other areas where pedestrians would normally come into contact with the work area.
- Ballasts must not be placed on the top rail and must not consist of nondeformable objects such as rocks or concrete.

Note: The addition of company identification must not detract from the striping on the face of the barricade rail(s) facing oncoming traffic.

Cones



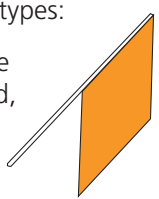
Description: Cones must be orange and must be between 28 and 36 inches in height with two reflectorized bands near the top. For nighttime use, cones must be retroreflectorized or equipped with lighting devices for maximum visibility. Retroreflectorization of cones that are 28 to 36 inches in height must be provided by a 6-inch-wide white band located 3 to 4 inches from the top of the cone and an additional 4-inch-wide white band located approximately 2 inches below the 6-inch-wide band.

Instructions for Use: The primary function of cones is to channel traffic. The cone should be used to control and direct traffic around or through the work area by gradually narrowing the roadway and indicating the path to be followed. Cones may be used in combination with:

- A flag inserted in the top of the cone to enhance its target value during daylight hours;
- Type B warning lights (high-intensity flashers), which may be used day or night (warning lights must flash when used to warn of a condition);
- Type C steady-burn warning lights when used to channelize traffic.

Signaling Devices

Description: Signaling devices must be one of the following types:



- Signal flag – must be retroreflectorized red, at least 24 inches by 24 inches, securely fastened to a staff 36 inches long.

- Signal light – a steadily burning red or red-orange flashlight wand.

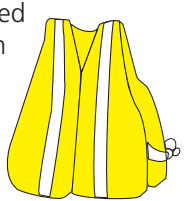
- Paddle – a combination "Stop" and "Slow" sign on an octagonal panel, at least 18 inches wide with letters 6 inches high, securely fastened to a rigid handle. Both faces must be retroreflectorized for nighttime use. The "Stop" face must be red with white letters and border. The "Slow" face must be orange with black letters and border.

Instructions for Use: Signaling devices should be used by flaggers to issue signals to oncoming traffic.

- The signal flag is for use during daylight hours, and the signal light is for use during emergency situations by a single flagger.
- The "Stop" and "Slow" paddles are used day or night when more guidance to motorists is needed. However, they should not be used where display of the paddle face in the opposite direction would be inappropriate or misleading.
- Use of the "Stop" and "Slow" paddle is preferable in a two-way traffic condition, such as the middle of a street, as opposed to an intersection where traffic may travel in four directions.

Safety Apparel

Description: Flaggers, as well as employees outside of the work area setup, must wear approved safety apparel available in Class & Stock.



Note: Must be used in work where mobile equipment is used or machinery is moving

Instructions for Use: Vests or compliant apparel must be worn on the outside of all other clothing. Trained employees assigned as flaggers must wear safely apparel when controlling traffic. When leaving or working outside a protected work area, employees exposed to vehicle traffic, e.g., setting up, maintaining, or removing work area protection, must wear a safety vest. Surveyors and employees working in the roadway with minimum protection must wear a safety vest.

Remember: The value of your safety vest is diminished when you crouch, bend, or move into a position that reduces your visibility or the reflective value of the vest.

Flags (used in conjunction with traffic-control devices)

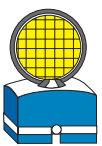
Description: Flags must be orange; a minimum of 16 inches by 16 inches and attached to a staff at least 30 inches long.

Instructions for Use: Flags may be displayed in a manner that does not obscure the legend above any channeling device, on vehicles or tool carts, on stanchions and barricades, and above warning signs.

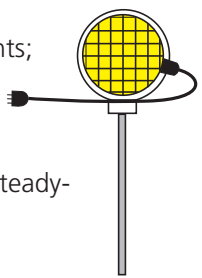
Note: Flags are a supplement to increase the target value and visibility of the work area during daylight hours. Flags may be placed at suitable intervals of not more than 20 feet during daylight hours on barricades used to outline excavations.

Low-Intensity Warning Lights

Description: Low-intensity lighting is for use during nighttime hours only. All warning lights must comply with the ITE "Purchase Specification for Flashing and Steady-Burn Warning Lights," such as:

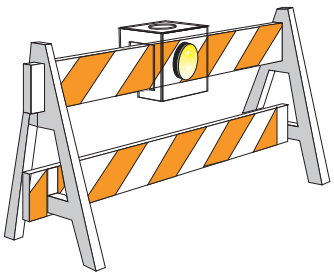


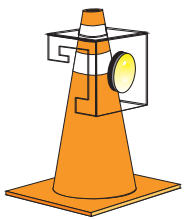
- Type A low-intensity flashing warning lights;
- Type C steady-burn warning lights;
- Type D 360-degree steady-burn warning lights.

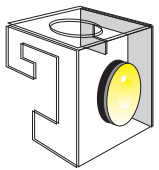


Instructions for Use: On barricades used to outline excavations, one light must be placed on the barricades at suitable intervals of not more than 20 feet. Use during hours of darkness only. (Use Type B high-intensity flashing warning lights for day and night.) Warning lights must have a minimum mounting height of 30 inches.

Safety cones/barricade LED lights







Traffic Control and Work Area Protection Arrangements

3

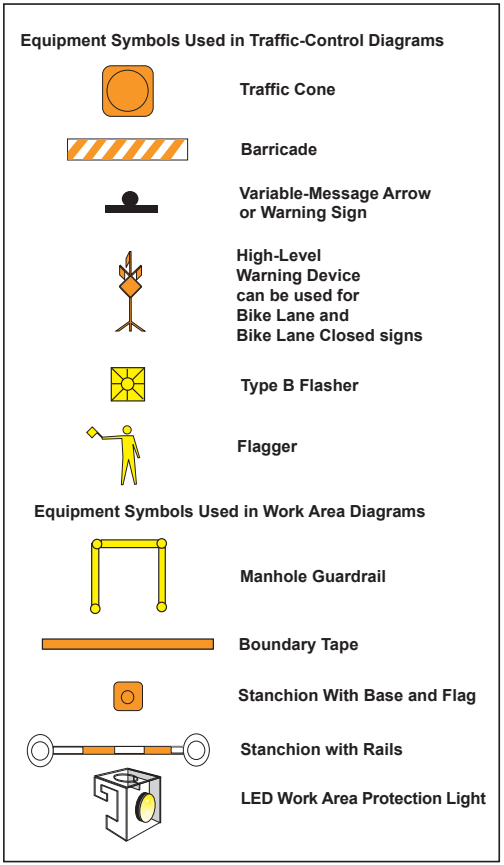
Work Area Protection Diagrams

This section provides graphic diagrams showing a variety of typical work locations. In each case, a scene is provided showing the work area protection properly deployed. In addition, a smaller "blueprint" diagram providing an overhead view of the job site helps to clarify the placement of signage, lights, barriers, and other work area protection equipment.

The arrangements shown in this section do not cover every possible work area configuration. They are intended to provide a representative sample of field conditions and to offer guidance when planning work area protection in similar settings. If you're not sure how to proceed, talk to your supervisor.

Using these diagrams as reference, you must also:

1. *Review the DOT permit for conditions of work. Verify information if needed.*
2. Select a traffic-control diagram that meets most nearly the requirements to control traffic at the work site.
3. Select a work area protection diagram for your type of operation.
4. Set up the work site in accordance with the arrangements selected. Adapt the arrangements where necessary to meet local conditions.



Work Area Protection Diagrams

These configurations are generally applicable to comparable work areas with similar road conditions.

- Setup for Pole Setting on Four-Lane Road With Two Lanes of Traffic in Each Direction
- Setup for Curved Two-Lane Road With Two-Way Traffic
- Setup in Middle Lane of Three Lanes of Traffic Moving in the Same Direction
- Setup in One Lane of a Four-Lane Road With Two Lanes of Traffic in Each Direction
- Setup at an Intersection With Pedestrian Crosswalks
- Setup at an Intersection With Pedestrian Crosswalks
- Setup Around Subsurface structure in Sidewalk Area
- Setup in Middle of Roadway Diverting Traffic
- Setup in Street Blocking Bike Lane

Setup for Pole Setting on Four-Lane Road With Two Lanes of Traffic in Each Direction

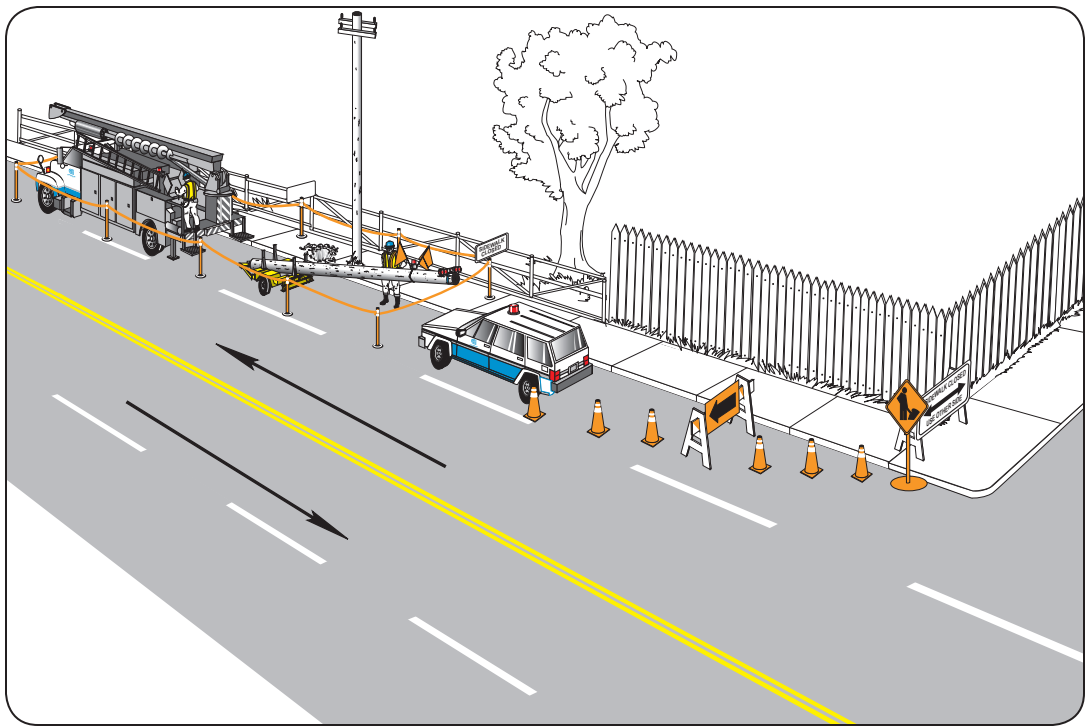
This configuration is generally applicable to comparable work areas with similar road conditions.

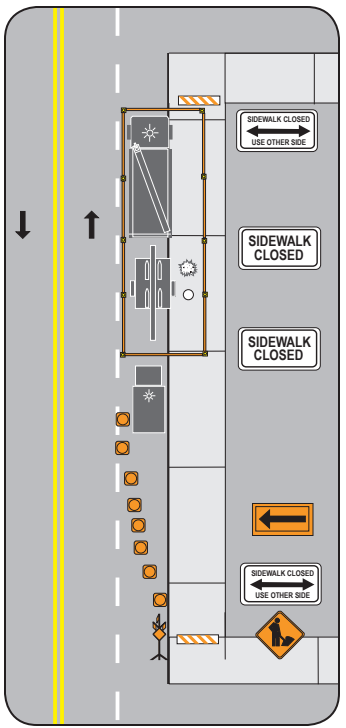
Setup

- Where necessary, assign a flagger while the work area is being prepared.
- Place the advance-warning sign at the beginning of the tapered work zone.
- Place the "Lane Closed" sign to appear in plain view after the advance-warning sign for traffic traveling toward the one closed lane.
- Place traffic cones so that the traffic is tapered away from the work area.
- Set up stanchions and boundary tape. (Tape may be used when pedestrians have restricted access to the work area.)
- Post "Sidewalk Closed" sign near setup (optional).
- Post "Sidewalk Closed — Use Other Side" sign on both sides of the work area, at the nearest corners to restrict pedestrian traffic on the work side of the street.

Equipment

- Advance-warning sign ("Worker Symbol," "Work Area Ahead," or "Utility Work Ahead")
- 28" or 36" traffic cones
- Lane-closure sign (arrow board or flashing-arrow panel)
- Stanchions and boundary tape
- Sidewalk-closed signage





Blueprint of work area

Setup for Bucket Truck on Curved Two-Lane Road With Two-Way Traffic

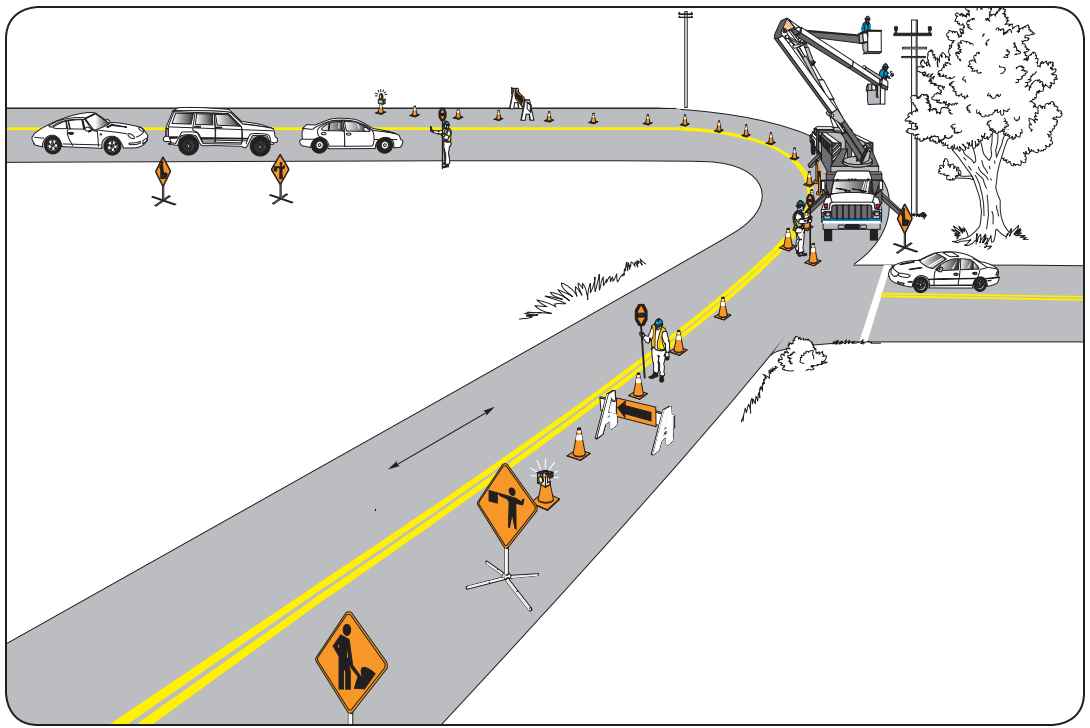
This configuration is generally applicable to comparable work areas with similar road conditions.

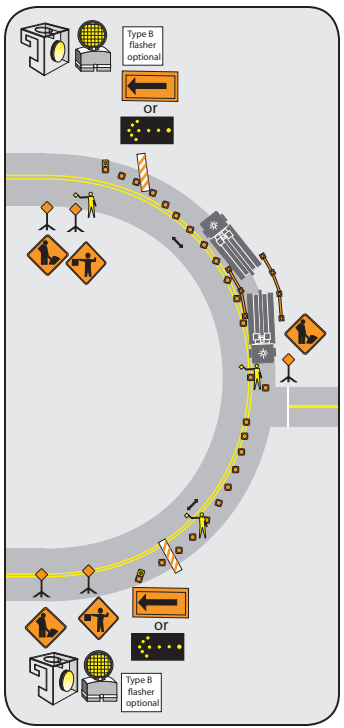
Setup

- Assign three flaggers, one at each end of the work area, and one at a nearby intersection, to control the flow of two-way traffic in one lane. The flagger position should be within a protected area, such as the tapered area.
- Ensure communications among flaggers (walkie-talkies).
- Place the advance-warning sign at the beginning of the tapered work zone for both sides of oncoming traffic.
- Place "Flagger Ahead" signs after the advance-warning sign and well before the flagger position.
- Place the "Lane Closed" sign to appear in plain view after the advanced warning sign for traffic traveling toward the one closed lane.
- Place the "Lane Closed" sign for traffic approaching on the opposite side of the double yellow line (optional).
- Place traffic cones so that upstream and downstream traffic are both tapered away from the work area.
- Set up stanchions and boundary tape to extend around work areas (tape may be used when pedestrians have restricted access to the work area).

Equipment

- 3 advance-warning signs ("Worker Symbol," "Work Area Ahead," or "Utility Work Ahead")
- Flags (optional)
- 2 lane-closure signs (arrow board or flashing-arrow panel)
- 2 "Flagger Ahead" signs
- 28" or 36" traffic cones
- Stanchions and boundary tape, safety cone, barricade LED lights
- Type B flashers (optional)
- 3 sets of flagger-communication equipment
- 3 flagger paddles





Blueprint of work area

Setup for Excavation in Middle Lane of Three Lanes of Traffic Moving in the Same Direction

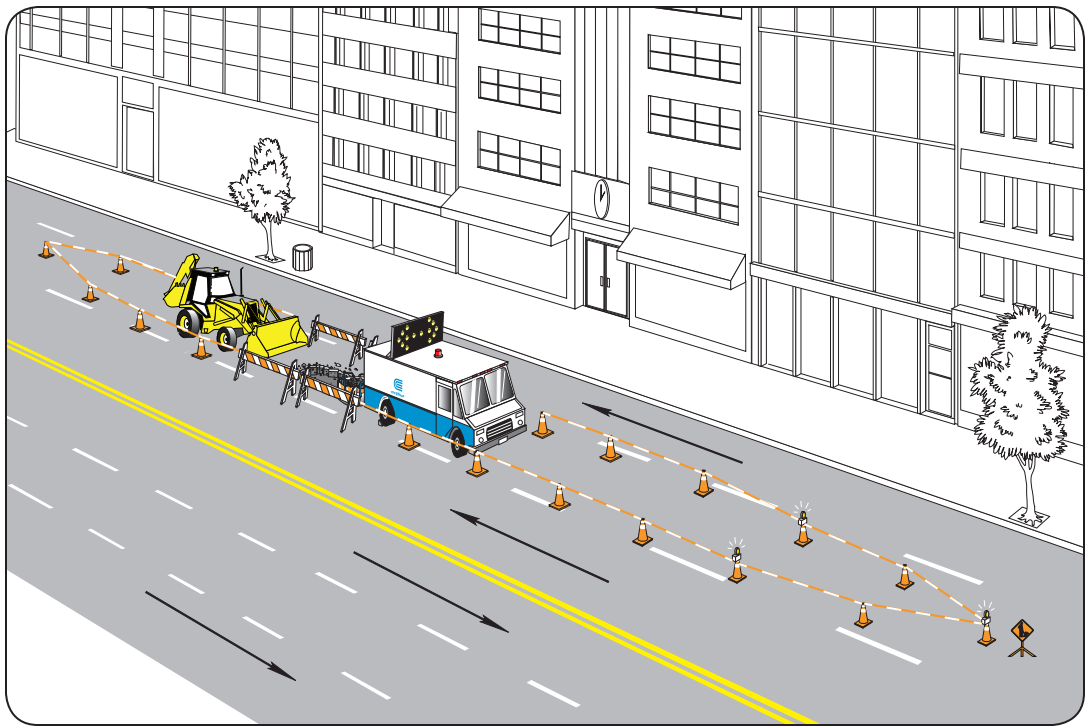
This configuration is generally applicable to comparable work areas with similar road conditions.

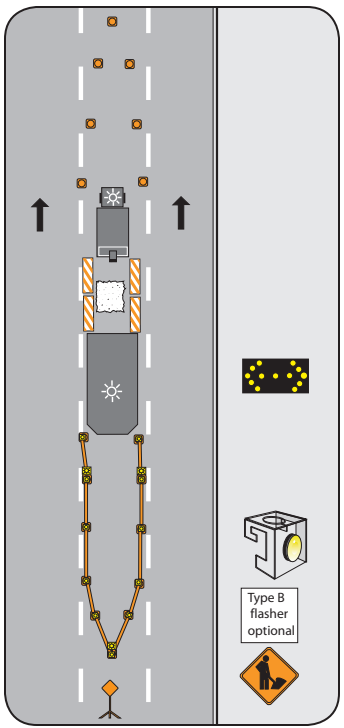
Setup

- Where necessary, assign a flagger while the work area is being prepared.
- Place the advance-warning sign at the beginning of the tapered work zone.
- Place the "Lane Closed" sign in plain view after the advance-warning sign.
- Place traffic cones so that the traffic is tapered away from the work area.
- Place sturdy barricades around the excavation work area.
- Filled Pel bags should be placed inside the work area nearest barricades that are most at risk of impact from oncoming traffic.

Equipment

- Advance-warning sign ("Worker Symbol," "Work Area Ahead," or "Utility Work Ahead")
- Flags (optional)
- 28" or 36" traffic cones
- Lane-closure sign (arrow board or flashing-arrow panel)
- Type B flashers/LED lights (optional)
- Stanchion and telescoping rails
- Barricades





Blueprint of work area

Setup for Flush Truck in One Lane of a Four-Lane Road With Two Lanes of Traffic in Each Direction

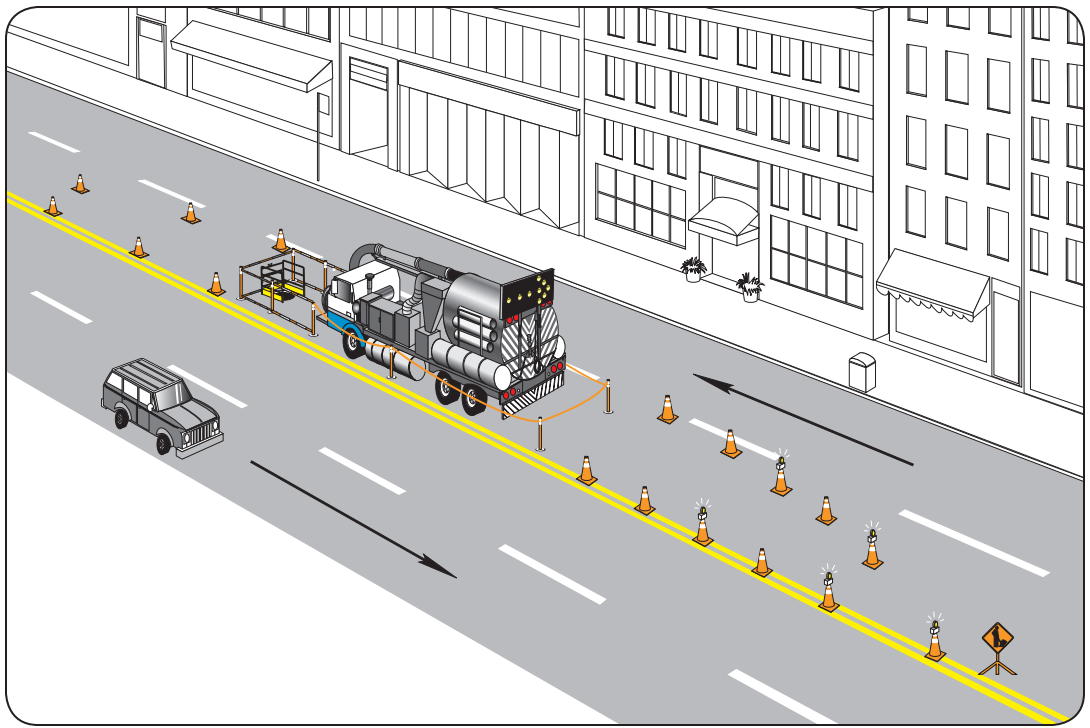
This configuration is generally applicable to comparable work areas with similar road conditions.

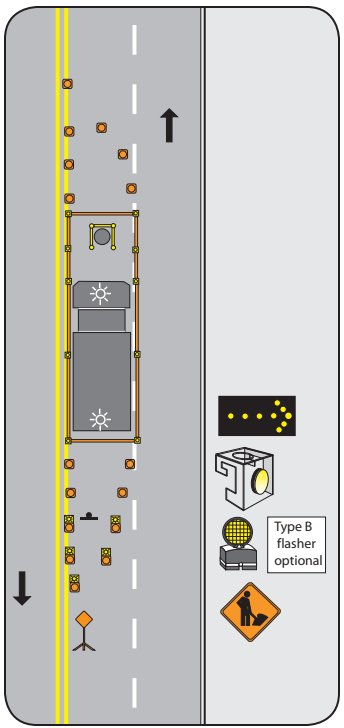
Setup

- Where necessary, assign a flagger while the work area is being prepared.
- Place the advance-warning sign at the beginning of the tapered work zone for both sides of oncoming traffic.
- Place the "Lane Closed" sign to appear in plain view after the advance-warning sign for traffic traveling toward the one closed lane.
- Place the flashing-arrow panel, in the caution mode (no arrow) for traffic approaching on the opposite side of the double yellow line (optional).
- Place traffic cones so that the oncoming traffic is tapered away from the work area.
- Place traffic cones to ease the downstream traffic flow and maintain separation of traffic flowing in the opposite direction.
- Set up stanchions and boundary tape to extend completely around the flush operation. (Tape may be used when pedestrians have restricted access to the work area.)

Equipment

- Advance-warning sign ("Worker Symbol," "Work Area Ahead," or "Utility Work Ahead")
- Flags (optional)
- 28" or 36" traffic cones
- Lane-closure sign (arrow board or flashing-arrow panel)
- Flashing-arrow panel, in the caution mode (optional)
- Stanchions, telescoping rails, and boundary tape
- Type B flashers (optional)
- Manhole guardrail





Blueprint of work area

Setup for Tool Cart at an Intersection With Pedestrian Crosswalks

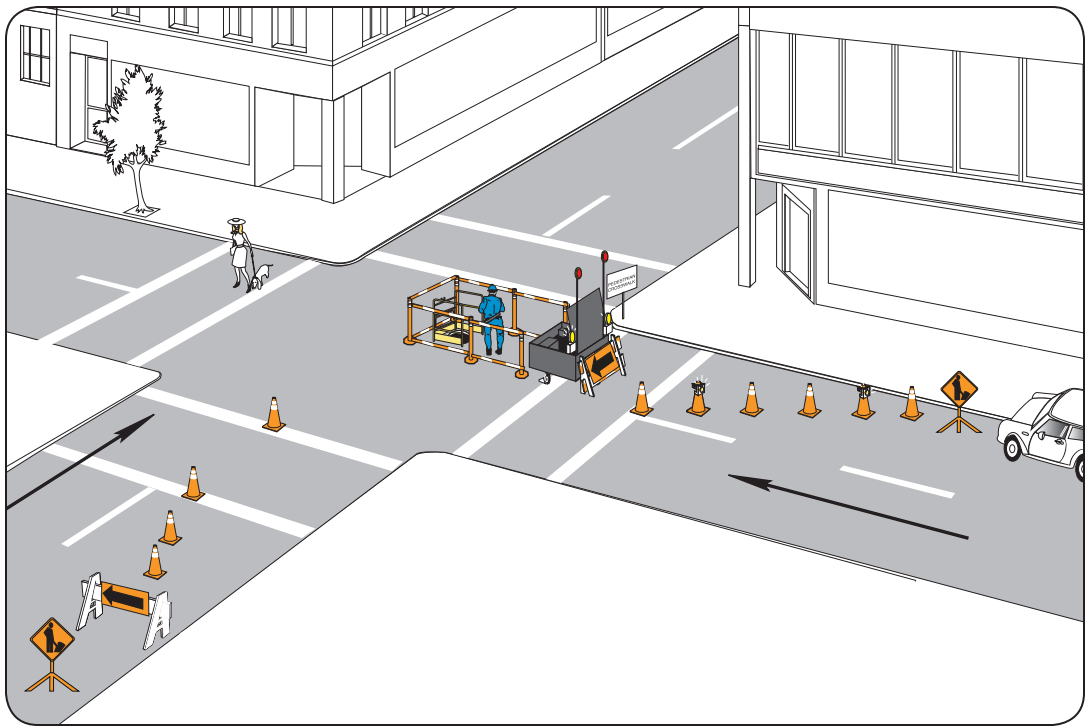
This configuration is generally applicable to comparable work areas with similar road conditions.

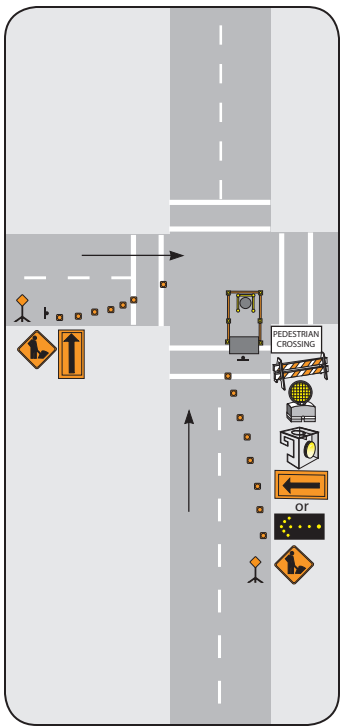
Setup

- Where necessary, assign a flagger while the work area is being prepared.
- This work area is immediately preceded by a parking lane. Place one advance-warning sign in the parking lane and another advance-warning sign for traffic that is restricted to the left of the work area.
- Place the "Lane Closed" sign so that it appears in plain view after the advance-warning sign for traffic that is restricted to the left of the work area. ("Lane Closed" signs are not required for parking lanes.)
- Place traffic cones so that the traffic is tapered away from the work area for oncoming traffic. Maintain pedestrian access to crossings not affected by the work area.
- Maintain pedestrian safety from upstream traffic at all relocated crossings with placement of Type III barricades or with barricades equipped with a bottom rail at most 6 inches above street level and a top rail at least 36 inches high (see Protection of Pedestrians, page 17).
- Place Type B flashers on barricades at pedestrian crossings.
- Post the "Pedestrian Crossing" sign to redirect pedestrian traffic.
- Set up stanchions and boundary tape to extend around work areas. (Tape may be used when pedestrians have restricted access to the work area.)

Equipment

- 2 advance-warning signs ("Worker Symbol," "Work Area Ahead," or "Utility Work Ahead")
- 28" or 36" traffic cones
- 1 lane-closure sign (arrow board or flashing-arrow panel)
- Type III barricades or barricades equipped with two rails
- Stanchions, telescoping rails
- 2 to 4 Type B flashers (required)
- "Pedestrian Crossing" sign (optional)
- LED work area protection lights (optional)
- Manhole guardrail





Blueprint of work area

Setup for Cable Trucks at an Intersection With Pedestrian Crosswalks

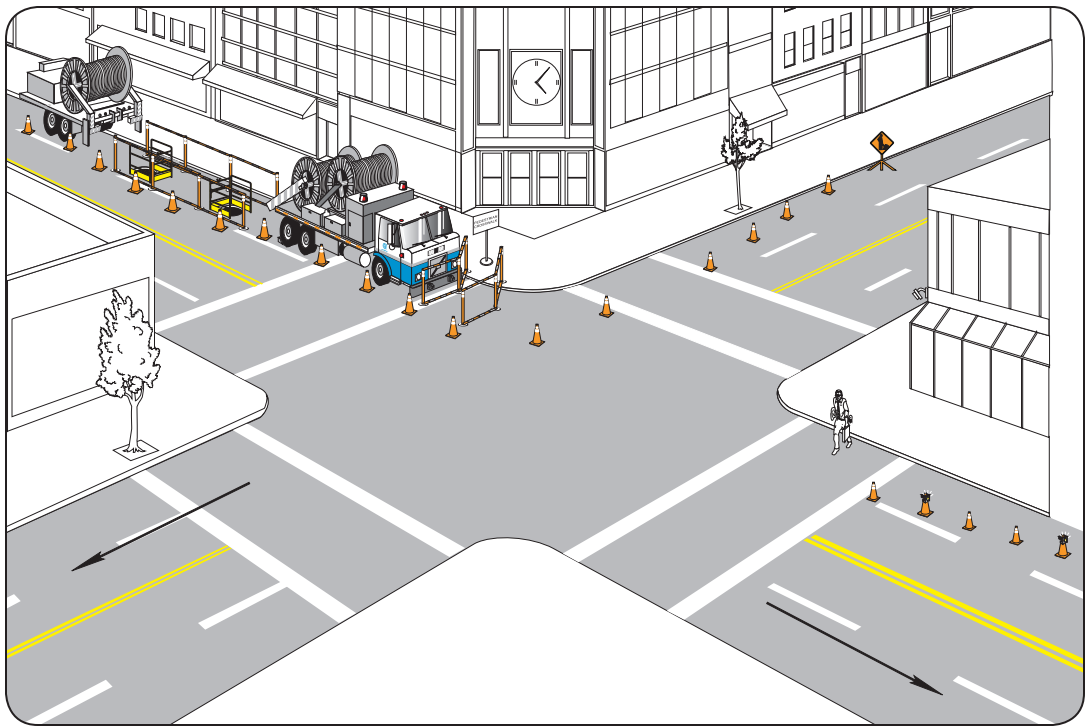
This configuration is generally applicable to comparable work areas with similar road conditions.

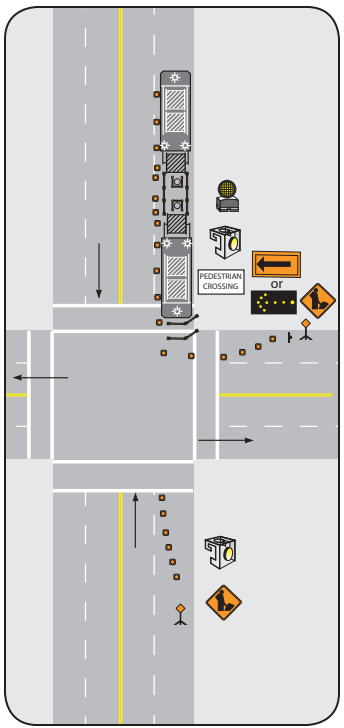
Setup

- Where necessary, assign a flagger while the work area is being prepared.
- Place the advance-warning signs on the far side of the intersection for traffic traveling upstream and for traffic that is restricted from turning into that lane.
- Place the "Lane Closed" sign to appear in plain view after the advance-warning sign for traffic traveling toward the one closed lane.
- Place traffic cones so that the traffic is tapered away from the work area for oncoming traffic.
- Maintain pedestrian access to crossings not affected by the work area.
- Maintain pedestrian safety from upstream traffic at all relocated crossings with placement of Type III barricades or with barricades equipped with a bottom rail at most 6 inches above street level and a top rail at least 36 inches high (see Protection of Pedestrians, page 17).
- Place Type B flashers on barricades at pedestrian crossings.
- Post the "Pedestrian Crossing" sign to redirect pedestrian traffic.
- Set up stanchions and boundary tape to extend around work areas. (Tape may be used when pedestrians have restricted access to the work area.)

Equipment

- 2 advance warning signs ("Worker Symbol," "Work Area Ahead," or "Utility Work Ahead")
- Flags (optional)
- 28" or 36" traffic cones
- 2 lane-closure signs (arrow board or flashing-arrow panel)
- Type III barricades or barricades equipped with two rails
- Stanchions and telescoping rails
- 2 to 4 Type B flashers (required)
- "Pedestrian Crossing" sign (optional)
- Manhole guardrails





Blueprint of work area

Job setup on sidewalk

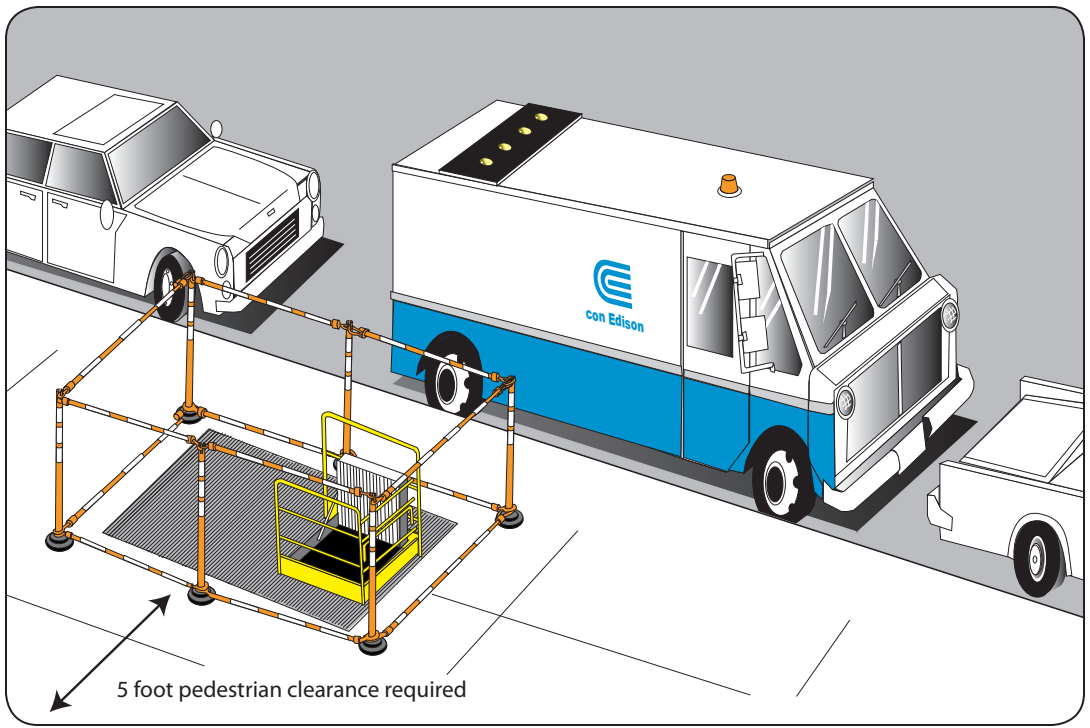
This configuration is generally applicable to comparable work areas with similar sidewalk conditions.

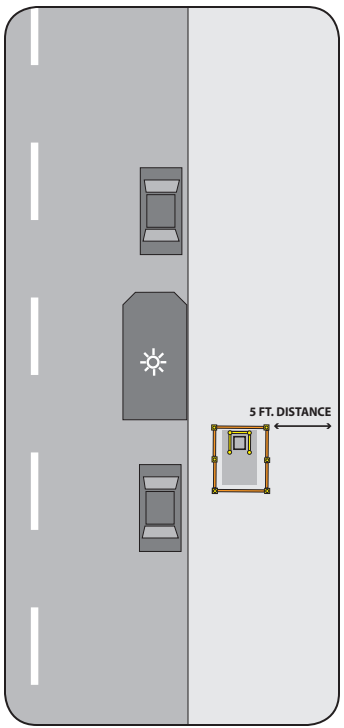
Setup

- Secure area with telescoping rail/stanchion combination.
- Two telescoping rails must be used per section, one on the bottom and the other hung on the top of the stanchions.
- Place cones around setup to give advance warning to pedestrians.
- Open underground structure covers.
- Utilize manhole guardrails, when feasible.

Equipment

- Stanchions and telescoping rails
- Manhole guardrail





Blueprint of work area

Closure/redirection of bike lane

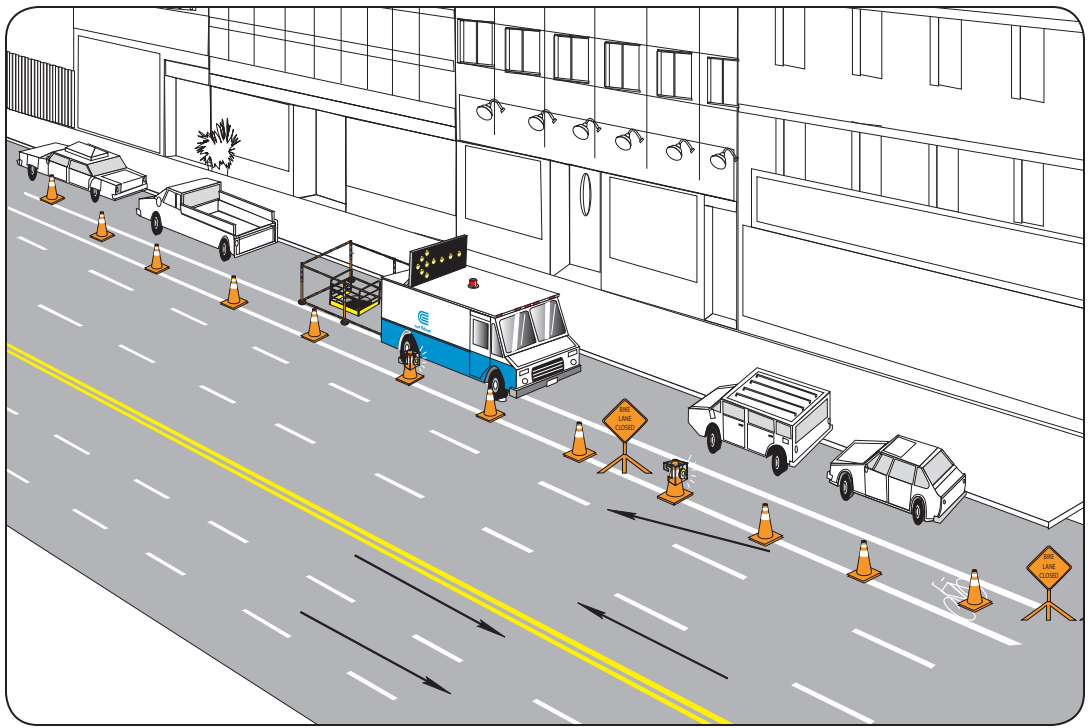
This configuration is generally applicable to comparable work areas with similar road conditions.

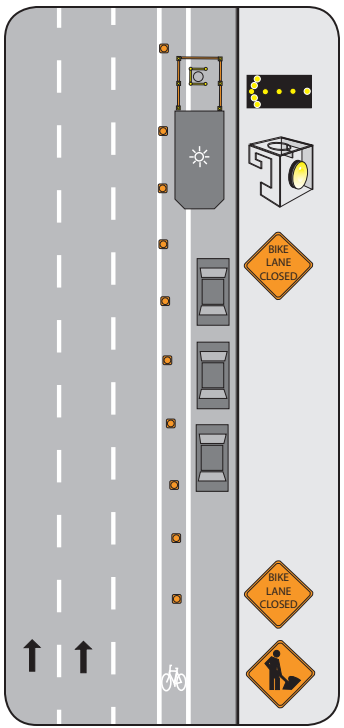
Setup

- Assign two flaggers while the work area is being prepared.
- Place the advance-warning signs on the far side of the intersection for traffic traveling upstream and for traffic that is restricted from turning into that lane.
- Place the "Bike Lane Closed" advance warning sign 350 feet and 200 feet prior to work zone, and also post at work zone.
- Place traffic cones so that the traffic is tapered away from the work area for oncoming traffic, while maintaining the bike lane.
- Maintain pedestrian access to crossings not affected by the work area.
- Set up stanchions with telescoping rails to extend around work areas. (Tape may be used when pedestrians have restricted access to the work area.)

Equipment

- Advance-warning signs ("Worker Symbol," "Work Area Ahead," or "Utility Work Ahead")
- Bike lane closed sign
- Flags (optional)
- 28" or 36" traffic cones
- 2 lane-closure signs (arrow board or flashing-arrow panel)
- Stanchions and telescoping rails
- Manhole guardrail and telescoping rails





Blueprint of work area

Diverting traffic into an oncoming lane

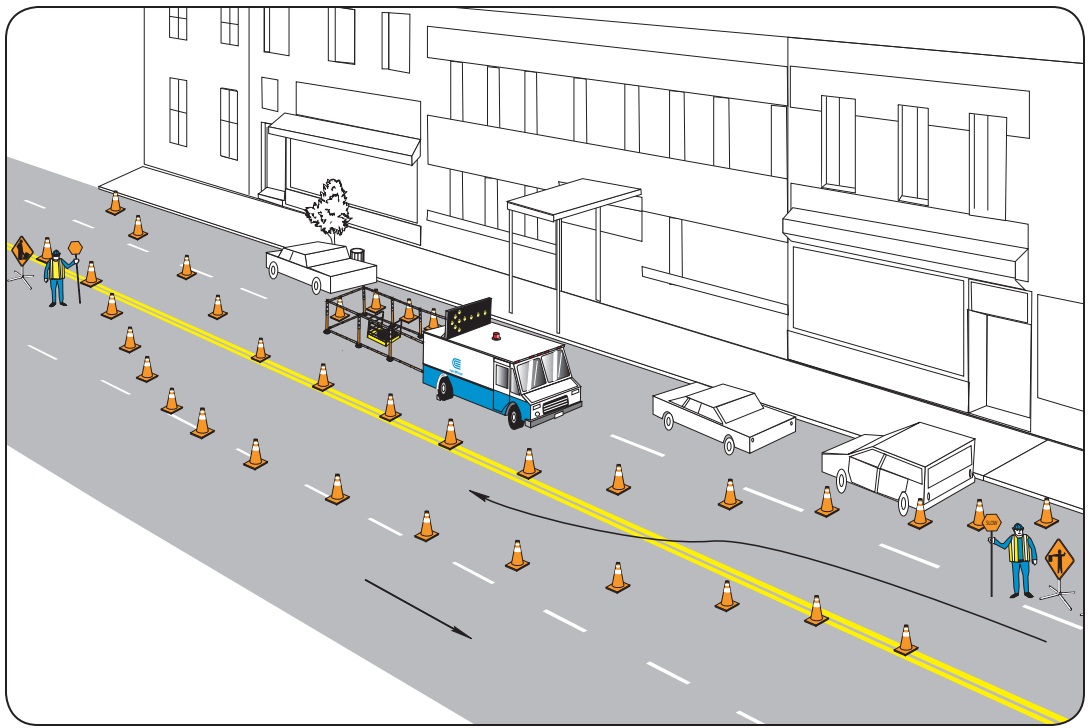
This configuration is generally applicable to comparable work areas with similar road conditions.

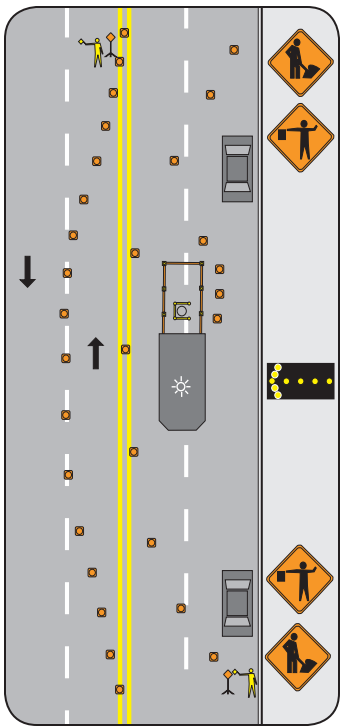
Setup

- Assign two flaggers while the work area is being prepared.
- Place the advance-warning sign at the beginning of both ends of the tapered work zone for both sides of oncoming traffic.
- Place the "Lane Closed" sign to appear in plain view after the advance-warning signs for traffic traveling toward the one closed lane.
- Place the flashing-arrow panel for traffic approaching on both sides of the double yellow line, directing the the traffic away from the work area.
- Place traffic cones so that the oncoming traffic is tapered away from the work area.
- Place traffic cones to ease the downstream traffic flow and maintain separation of traffic flowing in the opposite direction.
- Set up stanchions with telescoping rails around work set up behind the vehicle.

Equipment

- 2 advance-warning signs ("Worker Symbol," "Work Area Ahead," or "Utility Work Ahead")
- Flags (optional)
- 28" or 36" traffic cones
- 2 lane-closure signs (arrow board or flashing-arrow panel), whichmust direct traffic coming from both directions
- Stanchions and telescoping rails around work area
- Manhole guardrail





Blueprint of work area

Setup for Excavations in Sidewalk Area Re-directing Pedestrian Traffic

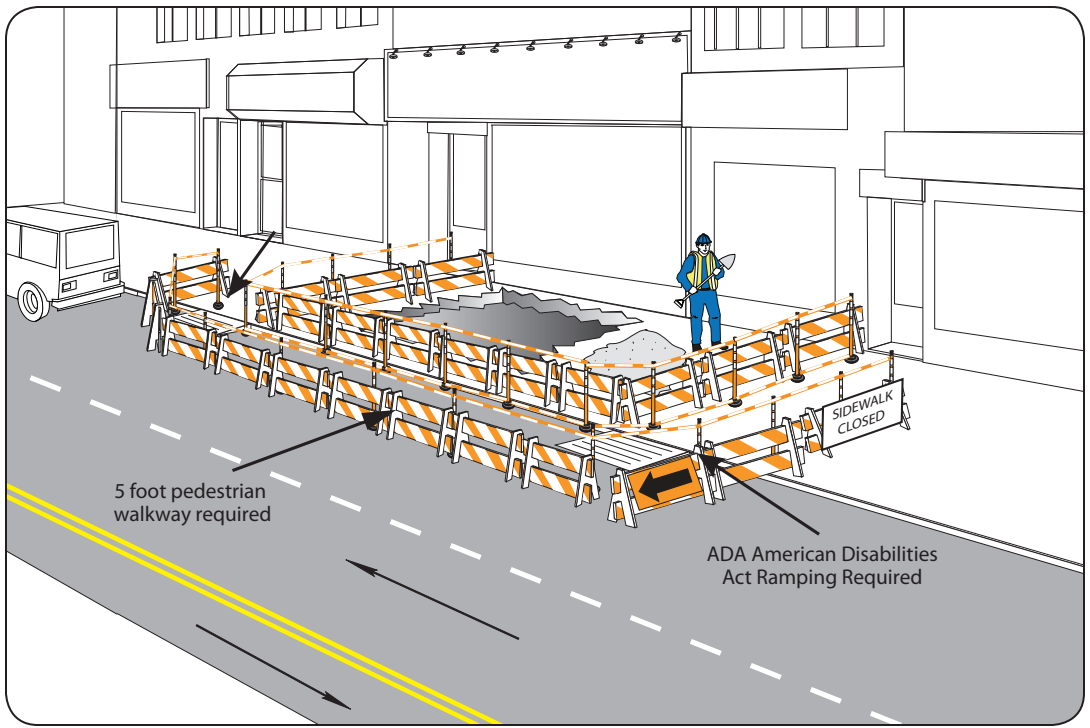
This configuration is generally applicable to comparable work areas with similar road conditions.

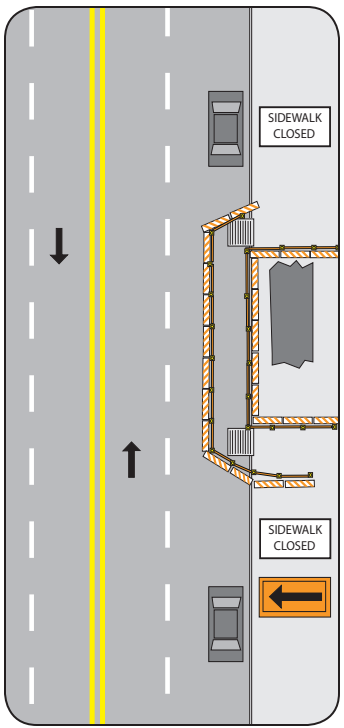
Setup

- Where necessary, assign a flagger while the work area is being prepared.
- Place sturdy barricades around the excavation work area.
- Place stanchions with telescoping rails to channel pedestrians around work area.
- Install ramps at curb entrance and exit of pedestrain passageway.
- Filled Pel bags should be placed in work area.
- Post "Sidewalk Closed" sign near setup.
- Post "Sidewalk Closed Use Other Side" sign on both sides of work area, at the nearest corners, to restrict pedestrian traffic on the work side of the street.

Equipment

- Type III barricades or barricades equipped with 2 rails
- Stanchions with telescoping rails
- Directional-arrow signs
- Sidewalk closed signs
- Ramps





Blueprint of work area

Setup for Excavation Near Curbside in Vehicle Parking Lanes

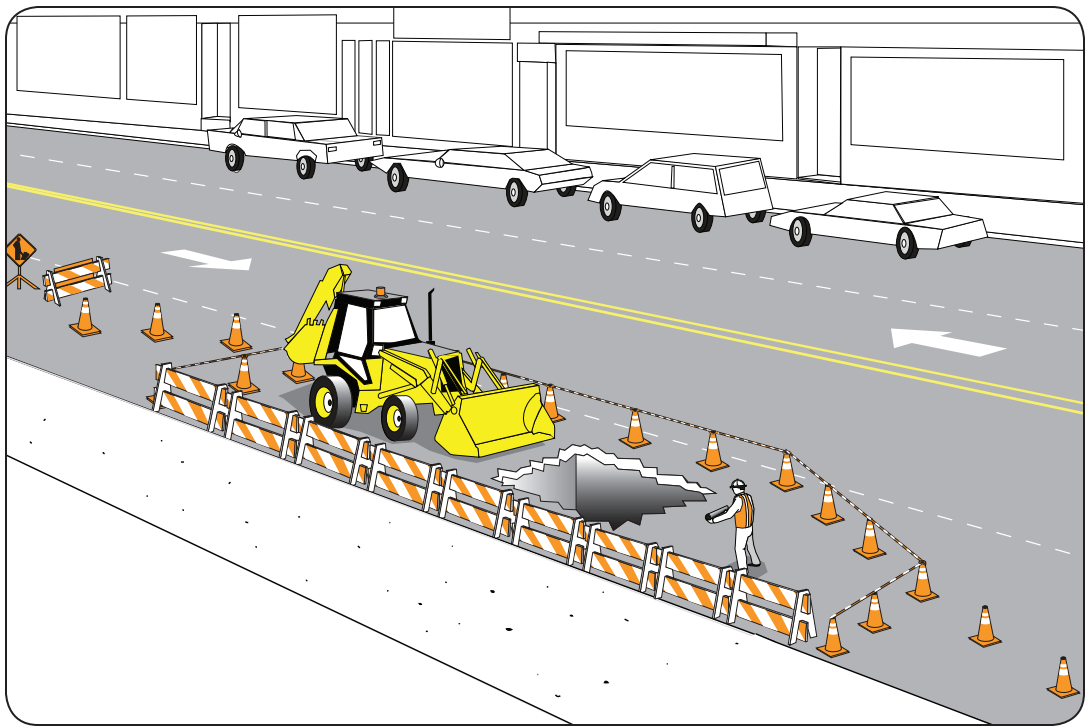
This configuration is generally applicable to comparable work areas with similar road conditions.

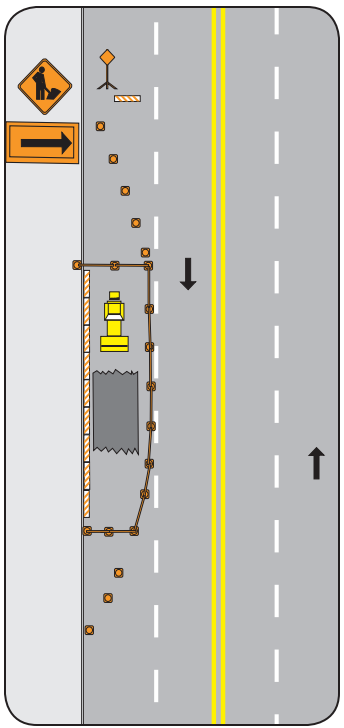
Setup

- Place sturdy barricades around the excavation work area.
- Cones with telescoping rails may be used around work area closed to vehicle traffic (optional).
- Lane-closure sign (arrow board or flashing-arrow panel).
- Type B flashers (optional).
- Advance–warning sign at the beginning of the tapered work zone.
- Filled Pel bags should be placed inside the work area nearest barricades that are most at risk of impact from oncoming traffic.

Equipment

- Type III barricades or barricades equipped with 2 rails
- Directional-arrow signs
- 28"-36" traffic cones
- Advance–warning sign
- Telescoping rails





Blueprint of work area

Setup for Excavations Near Intersections and Crosswalks While Redirecting Pedestrians

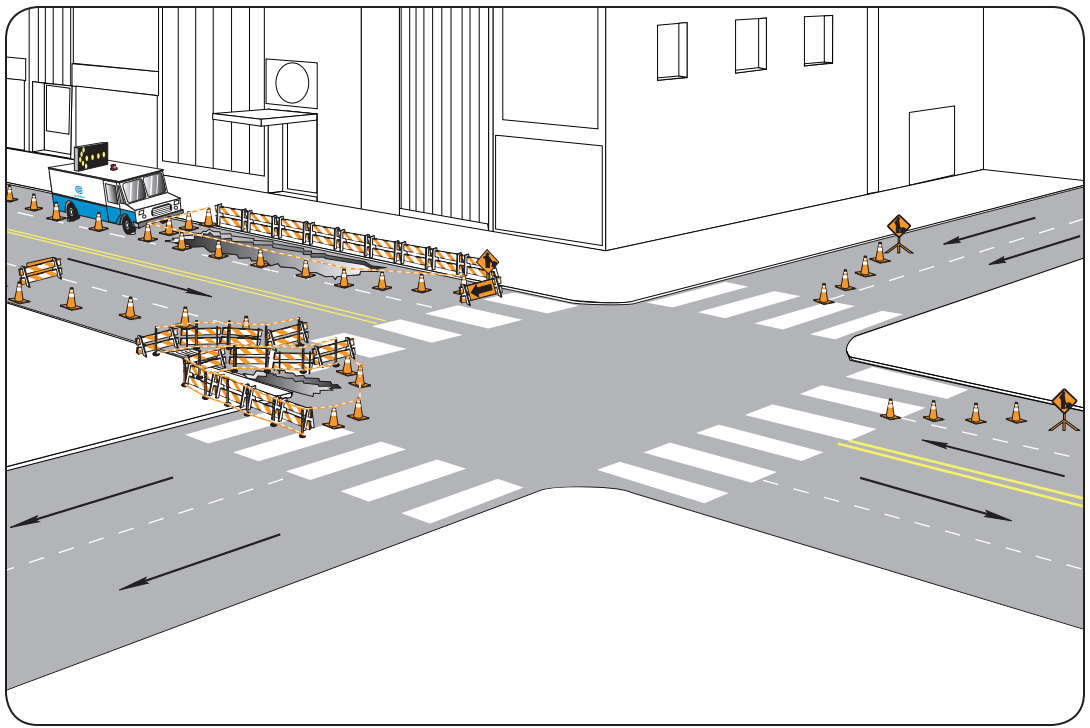
This configuration is generally applicable to comparable work areas with similar road conditions.

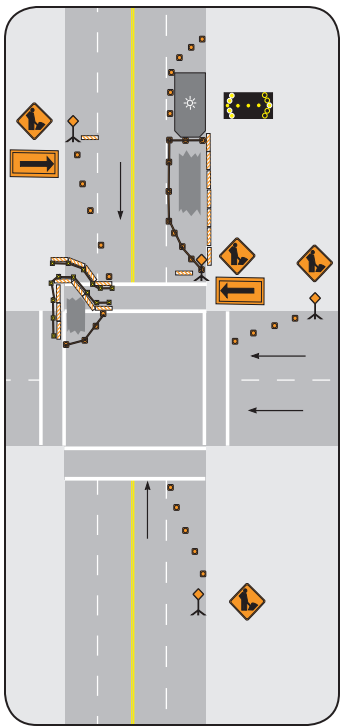
Setup

- Place sturdy type barricades around the excavation work area.
- Post the "Pedestrian Crossing" sign to redirect pedestrian traffic.
- Place Type B flashers on barricades at pedestrian crossing.
- Filled Pel bags should be placed inside the work area nearest barricades that are most at risk of impact from oncoming traffic.
- Maintain pedestrian safety from upstream traffic at all relocated crossings with placement of Type III barricades or barricades equipped with a bottom rail, no more than 6 inches above street level, and a top rail at least 36 inches high (see Protection of Pedestrians, page 17).

Equipment

- 4 advance-warning signs ("Worker Symbol," "Work Area Ahead," or "Utility Work Ahead")
- Flags (optional)
- 28" or 36" traffic cones
- 1 lane-closure sign (arrow board or flashing-arrow panel)
- Type III barricades or barricades equipped with two rails
- Stanchions, telescoping rails
- "Pedestrian Crossing" sign (optional)





Blueprint of work area

Setup for Boom Truck for Transformer Installment

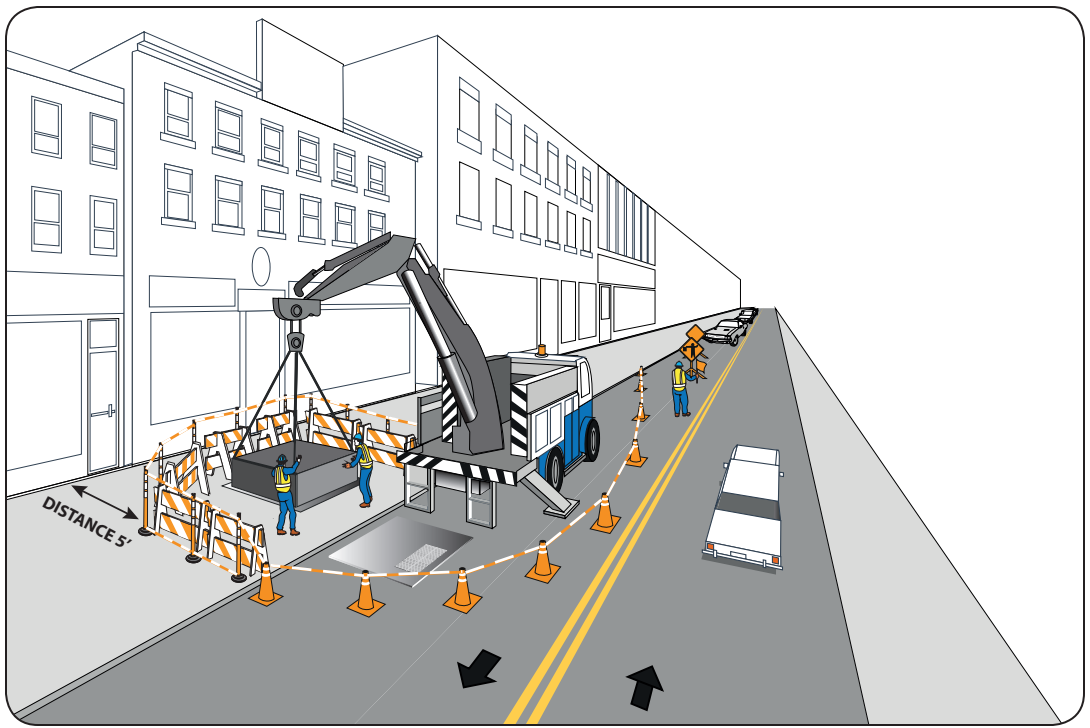
This configuration is generally applicable to comparable work areas with similar sidewalk conditions.

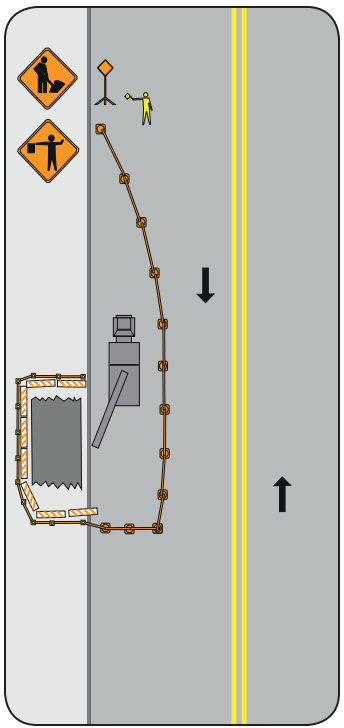
Setup

- Type 2 barricades (upper and lower rails) must be used in sidewalk area placed around the subsurface structure.
- Secure work area with cones/ telescoping rails combination in roadway.
- Install advance warning to pedestrians.
- Open underground structure covers.
- Use manhole guardrails when feasible.

Equipment

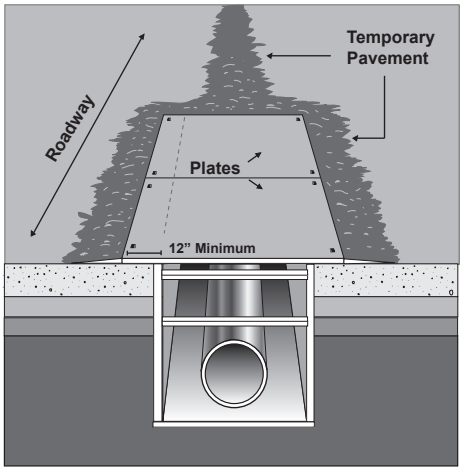
- Advance–warning sign (“Worker Symbol,” “Work Area Ahead,” or “Utility Work Ahead”)
- Flagger ahead sign
- Type 2 barricades
- 28” or 36” traffic cones
- Stanchions and telescoping rails





Blueprint of work area

Excavation Operations



Where operations require open trenches, plates should be used to maintain passageways for pedestrians and traffic lanes for vehicles.

- Plates must be large enough to span the opening, have a minimum bearing area one (1) foot wide on each side of the trench, and must be adequate to carry the load.
- Trench walls and adjacent soil must be sufficiently stable to use plates.
- Areas at the edge of plates must be tapered to provide smooth riding and safe walking conditions. ***It is important to avoid pedestrian tripping hazards or plate movement.***
- Plates must be fastened with spikes in pre-drilled holes, or spiked securely from the side to prevent movement off the openings.
- For wide trenches or unstable soil conditions, consider constructing temporary bridges.

Sign Placement During Winter Months and the Winter Moratorium

- Signs must be posted five feet prior to the steel plate(s) throughout the winter months, ***regardless of weather conditions***.
- On two-way streets, signs must be posted on both sides of the street (i.e., on sidewalks) five feet prior to the steel plates.

The Winter Moratorium requires special handling of steel plates in travel lanes.

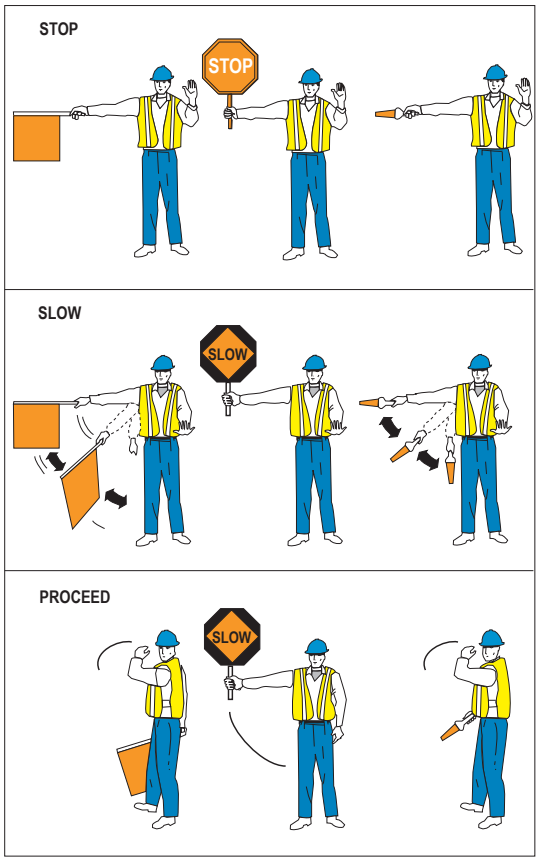
- Between December 1 and March 1, all steel plates in a travel lane must be recessed (countersunk), except if work can be completed within five working days from the permit work start date. In that case, steel plates can be pinned and ramped.
- Signs indicating Steel Plates Ahead or Raise Plow are required between December 1 and March 1, ***even if steel plates are countersunk***.

Flagger at Work Sites

A flagger will be required for certain work operations where the traffic must be stopped or controlled. Flagging is a form of communication with the motorist. The language of flagging consists of only three signals: STOP, SLOW, and PROCEED.

When traffic in both directions must use a single lane for a limited distance, movements from each end must be coordinated. Provisions should be made for alternate one-way movement through the constricted section via methods such as flagger control, a flag transfer, a pilot car, traffic-control signals, or stop, or yield control. Control points at each end should be chosen to permit easy passing of opposing lanes of vehicles. If traffic on the affected one-lane roadway is not visible from one end to the other, then flagging procedures, a pilot car with a flagger, or a traffic-control signal should be used to control opposing traffic flows.

- Flaggers must wear approved safety apparel available in Class & Stock that is compliant with American National Standard for High-Visibility Apparel, ANSI 107-2010, ASTM 1506 HRC 1, Class 2 or 3 risk exposure.
- The flagger must be clearly visible at all times to approaching traffic for a distance sufficient to permit proper response by the motorist to the flagger's instructions and to permit traffic to reduce speed before entering the work zone.



- The "Flagger Ahead" sign must go before the flagger station, and the flagging station should be well ahead of the work area.
- The flagger station should be located at the start of the taper.
- The flagger should always face the oncoming traffic and make eye contact with the lead motorist.
- The flagger should stand alone, never permitting a group of workers to congregate around the flagger station.
- Flaggers will focus on the task at hand, directing traffic, and shall not be distracted by other factors, including, but not limited to, personal cell phones, electronic devices, and the like.
- When the situation requires the use of flags, only approved flags shall be used.
- When two flaggers are used, one flagger will be designated as the lead flagger.
- When two flagging stations are not visible to one another, radio communication is required or a third flagger may be stationed at a point visible in between each flagging station.
- If the flagging stations are too far apart for verbal communications, the flag transfer method of one-lane, two-way traffic control may be used. In this method, the driver of the last vehicle proceeding into the one-lane section is given a red flag and instructed to deliver it to the flagger at the other end. The opposite flagger, upon receipt of the flag, then knows that it is reasonably safe to allow traffic to move in the other direction.
- Flaggers must be illuminated at night.
- Floodlights must not produce a disabling glare condition for approaching road users, flaggers, or workers.

Stock Numbers and Descriptions

This list of stock numbers and device descriptions will help you identify the exact equipment needed to safely complete field operations.

Numbers	Description
059-6007	Chock galvanized steel
587-0894	Sign; Symbol of men working with case provided
024-7601	Sign; Bike lane ahead legend, 36" diamond shape, reflective
024-7619	Sign; Bike lane closed for work area protection
024-7429	Sign; Flagger ahead symbol, 36" diamond shape, reflective
024-7742	Sign; Lane closed ahead, 36"x36" diamond shaped
024-7510	Sign; Road closed
024-7486	Sign; Sidewalk closed
587-1298	Stand; Work area protection-advance warning
587-0491	Light; Portable compact rotary 360 degree beacon

Numbers	Description
059-4812	Guard; Manhole-sub surface protection devices
686-0274	Stanchion base
686-0282	Stanchion pole
059-1487	Tape; Safety barrier
059-5520	Retractable cone — bar extends from 6' to 10' orange white
NS0108630	Barricade; Rail
NS0108629	Barricade; A-frame
NS0108632	28" cone
NS0108631	36" cone
024-1984	Flag; Red danger
680-0107	Safety vest; S/M
680-0102	Safety vest; L/XL
680-0101	Safety vest; 2XL/3XL
587-1579	LED work area protection lights

May 2014