

## 8. Work Area Protection

### Overview

This section discusses the following topics as they relate to protecting people at work sites:

- General Work Site Guidelines
- Pedestrian and Traffic Control
- Grounding and Bonding
- Customer Work Sites

Guarding the work area not only protects the work team but also protects the public from injury. Signs, flags, warning lights, and barricades are some of the basic tools needed to meet this important objective.

### References

#### **Pedestrian and Traffic Control References:**

- Defensive Driving Course, National Safety Council, Chicago, Illinois
- Federal Motor Carrier Safety Regulations, DOT, Parts 390-397, Washington, D.C.
- Motor Fleet Safety Manual, National Safety Council, Chicago, Illinois
- OSHA Safety and Health Standards 29 CFR 1910.145, 1910.268, and 1926 Subpart G
- Manual on Uniform Traffic Control Devices (“MUTCD”), Millennium Edition, December 2000

### **Grounding and Bonding References:**

- OSHA Standard 29 CFR 1910.137
- OSHA Standard 29 CFR 1910.268 (e)(m)

### **General Work Site Guidelines**

The following fundamental principles and precautions must be understood and utilized at work sites:

1. Place warning devices first. Place them before positioning the truck, opening a manhole or starting other work.
2. Keep exposure to a minimum. Discuss job operations off the street and not in the road.
3. Be constantly alert. This supplements the best warning equipment available and is necessary to ensure maximum safety. Expect the unexpected from all drivers.
4. Provide more protection than appears necessary. Over protect rather than under protect.

### **Pedestrian and Traffic Control**

The following is discussed as it relates to pedestrian and traffic control:

- Work Area Rules
- Protection Device Guidelines
- Signalmen Guidelines
- Barricades
- Drop Wires
- Protection Device Setup



## Protection Device Guidelines

FairPoint minimum standards for Work Area/Work Zone Protection Devices:

### Traffic Cones – Roadway

Cones must be fluorescent orange in color, 36” in height with one 4” and one 2” reflective collar. Cones must weigh 8 pounds or more to maintain stability at traffic speeds.

### Traffic Cones – Non-Roadway

Cones must be fluorescent orange in color, not less than 28” in height and with one 4” and one 2” reflective collar. Cones must weigh 7 pounds or more to maintain stability.



**NOTE:** Traffic cones less than 28” may be used in non-roadway/right-of-way use to mark hazards (excavations, guy hazard, etc.) or for parking lot use.

### Safety Vests

Safety Vests must be DOT Class II, Level II (ANSI/ISEA 107-2004 standard) full-vest type in fluorescent orange or green (check with your state DOT for any restrictions), with reflective stripes. Sportex RN#95485 or Dicke #V1200 (or equivalent) are FairPoint standard.

**Safety Vehicle Lighting** must meet DOT Class I standard for both daylight and nighttime use. Amber lens, not less than 5” in height, mounted in location(s) on the vehicle so it is clearly visible from 360°. FairPoint Standard designates the Star 240C permanent-mount or 240S magnetic-mount, or equivalent.

Additional lighting for construction or construction-support vehicles include the Star LDHEF-6 LED flasher, mounted in tandem, in either permanent or portable rack-mounted configuration; and the Star “StarStik” TD77 or TD93 Traffic-Directors, or equivalent.

The following guidelines apply to the use of protection devices:

1. The first device placed at a work site is the “MEN WORKING” sign.
2. Place initial warning devices for traffic control a safe distance ahead of the work area to give the motorist sufficient time to stop, if necessary, before reaching the work area.
3. The recommended distances for placing warning signs and traffic cones at various speed limits are listed below:

## SPACING FOR WARNING SIGNS AND CONES

Traffic Speed in MPH	Initial Sign Distance	Cone Spacing
15 or below	50 – 90 ft.	10 ft.
25	90 – 150 ft.	20 – 25 ft.
35	150 – 240 ft.	30 – 40 ft.
45	240 – 360 ft.	40 – 50 ft.
55	360 – 550 ft.	50 – 60 ft.

4. Use cones to “round off” the traffic channel and to clearly define the work area.
5. Use amber lenses if flashers or lanterns can be confused with operational signals for nearby railroads and bridges. Do not mix colors of flashers on the site.
6. If the job requires vehicles or equipment to be parked in a traffic lane, or to travel through the traffic lane, there should be at least one signalman controlling the flow of traffic from both directions.
7. Remove warning devices as soon as work is completed. Remove devices in reverse order from the order in which they were placed, beginning away from the direction of traffic and removing the “MEN WORKING” sign last.
8. Some conditions, such as hills, curves or inclement weather, may require additional warning devices.
9. As work progresses along a road or highway, move warning devices at the same time the project moves.
10. Do not allow people or vehicles to block the view of warning devices.
11. Cones should not be used as barricades and should not be left in position overnight.
12. The following guidelines apply to the care of protection devices:
  - a. Keep all warning devices clean and in good condition. Place the devices on the truck so they are not damaged by contact with tools and materials.
  - b. Store warning flags carefully when not in use. Replace dirty, torn, faded or damaged flags.

- c. Inspect all flashers periodically to ensure they still operate at the proper flashing rate of 55 – 75 flashes per minute. A slower rate usually indicates the batteries require changing. The manufacturer sets the flashing rate. Do not attempt to make adjustments in the field.

## **Signalmen Guidelines**

The following is discussed as it applies to signalmen at work sites:

- General Guidelines
- Signaling Traffic to Reduce Speed
- No Signal Intended

### **General Guidelines**

Follow the general guidelines below to direct traffic:

1. Wear an orange warning vest with night reflective material while flagging.
2. Use orange flags at least 24 inches square.
3. Control traffic in accordance with DOT regulation hand or sign signals.

### **Signaling Traffic to Reduce Speed**

Follow the guidelines below to signal traffic to reduce speed:

1. Face approaching traffic being directed to reduce speed. Hold the signaling device in the hand closest to the traffic flow.
2. Move signal flags or signal lights slowly back and forth in an arc between a vertical downward position and a horizontal extended position. Do not raise the arm above shoulder height.
3. When a signal paddle is used, turn the slow face toward approaching traffic. For emphasis, the signalman may slowly raise and lower the free hand with the palm down.

## **No Signal Intended**

Follow the guidelines below when not directing traffic:

1. Hold signal flags at rest with the staff in a vertical position at your side when not directing traffic.
2. Remove from view of approaching traffic signal paddles not being used.
3. Extinguish signal lights or hold them at rest in a vertical position at your side when not directing traffic.

## **Barricades**

The function of barricades and channelizing devices is to warn and alert drivers of hazards created by construction or maintenance activities on or near traveled ways, and to guide and direct drivers and pedestrians safely past the hazards.

The following guidelines apply to the use of barricades:

1. Barricades must not only be highly visible by themselves, but they must also be protected by advance warning devices and by lighting or reflecting devices at night.
2. Barricade warning lights must emit a yellow light at a rate of 55 to 75 times per minute.
3. Place barricades near the hazard, secure them properly, and ensure they are visible to the general public.

Refer to Figure 8-1 for barricade types.

## **Barricade Types:**

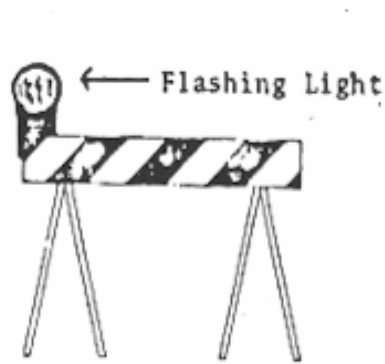


FIGURE 2

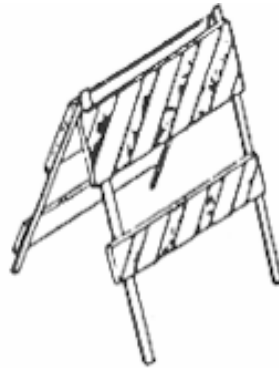


FIGURE 3

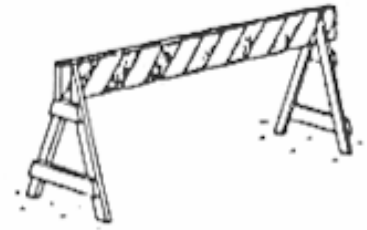


FIGURE 4

**Figure 8-1. Barricade Types**

## Drop Wires

The following guidelines apply to the use of drop wires:

1. Use only voltages of less than 300 volts.
2. Assistance is required when conditions are such that one man cannot perform the work safely such as:
  - a. Lowering a drop wire
  - b. Raising a lowered drop wire or replacing a drop wire
  - c. Stringing of any wire over streets, highways, traffic, or trees
3. A hang line must not overhang the street unless it is properly guarded. If possible, park the company vehicle so it shields the hang line.

## Protection Device Setup

Refer to Figure 8-2 through Figure 8-4 for the setup of warning devices.

No one standard sequence of warning devices can be set up as an inflexible arrangement for all situations due to the variety of conditions encountered. (Figures 5 thru 13)

WORK OPERATIONS NEAR THE CREST OF A HILL

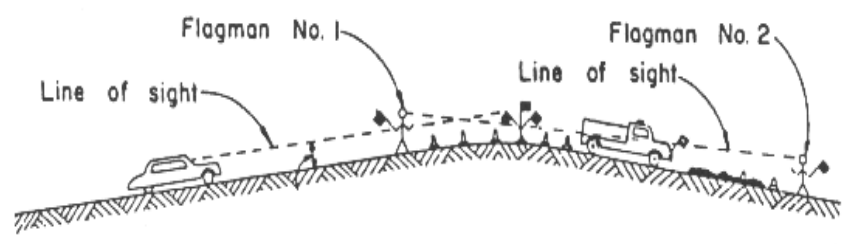


FIGURE 5

- Flagmen must be visible to each other. (When flagmen are warranted.)
- High level safety flags must be visible to motorists ascending the hill.

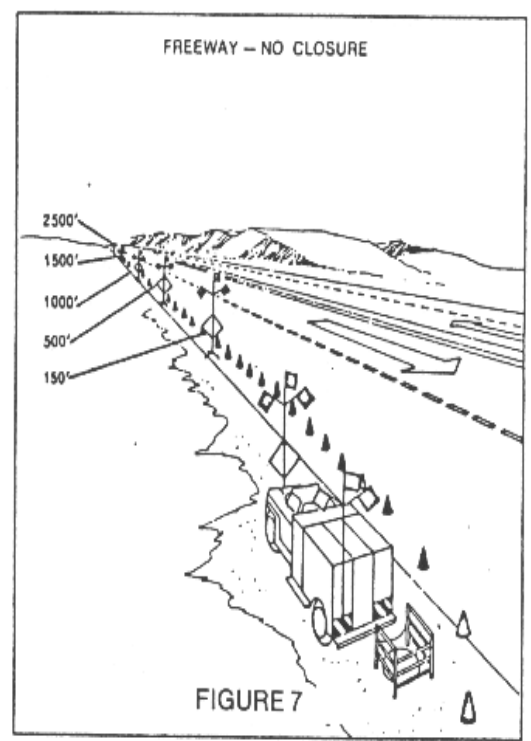
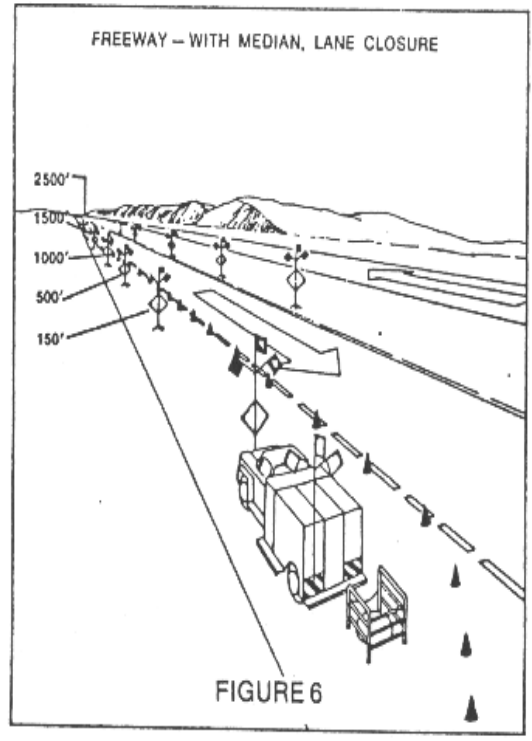
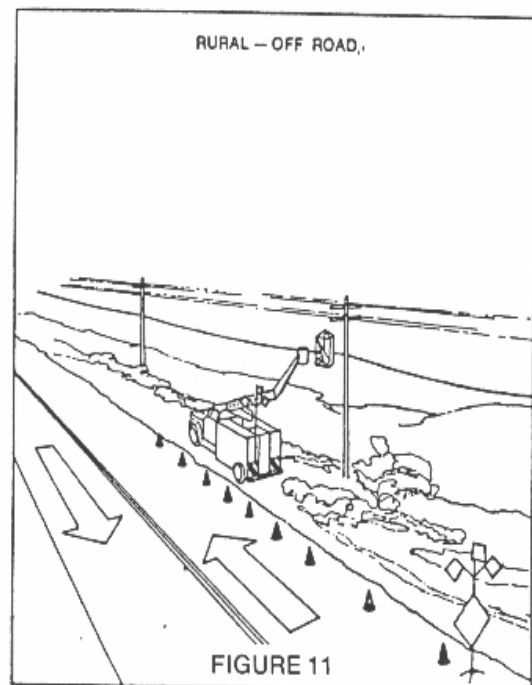
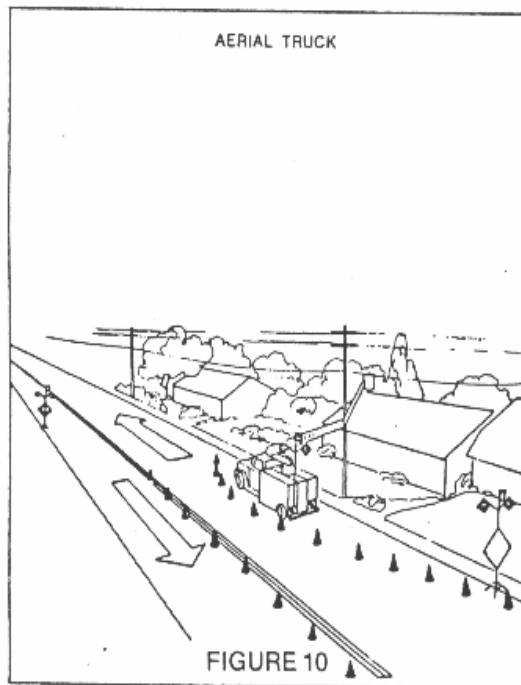
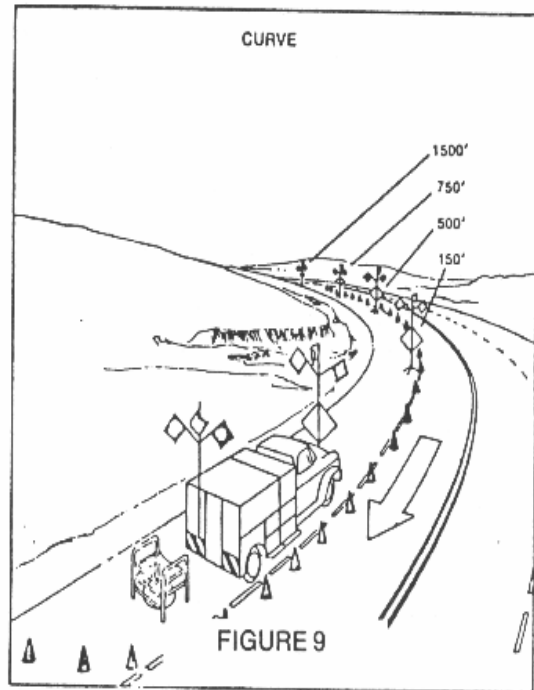
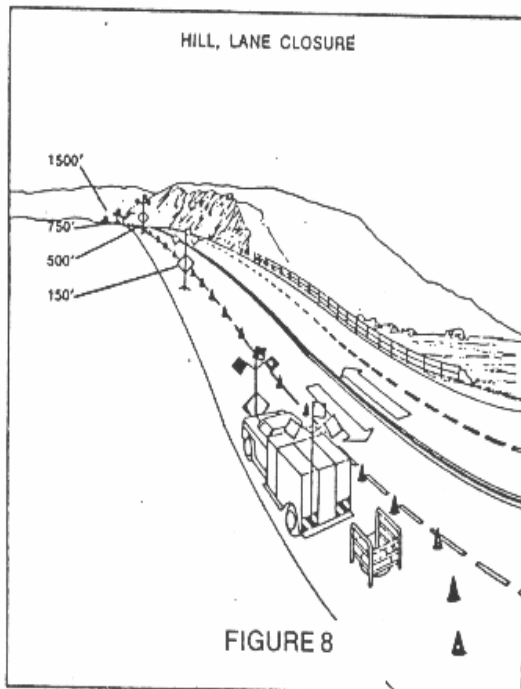
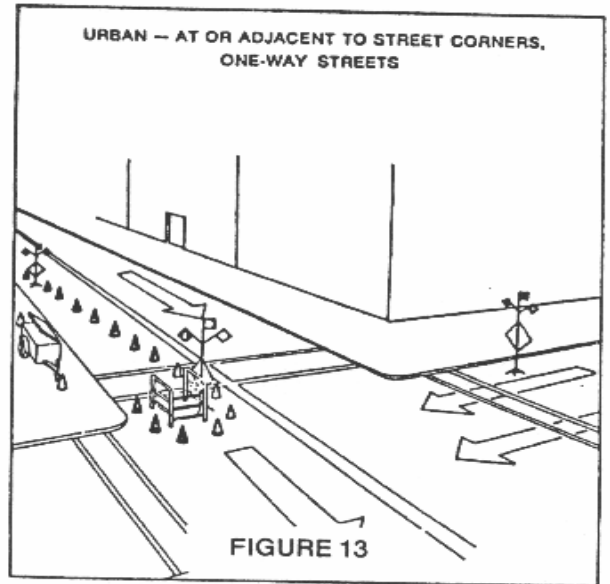
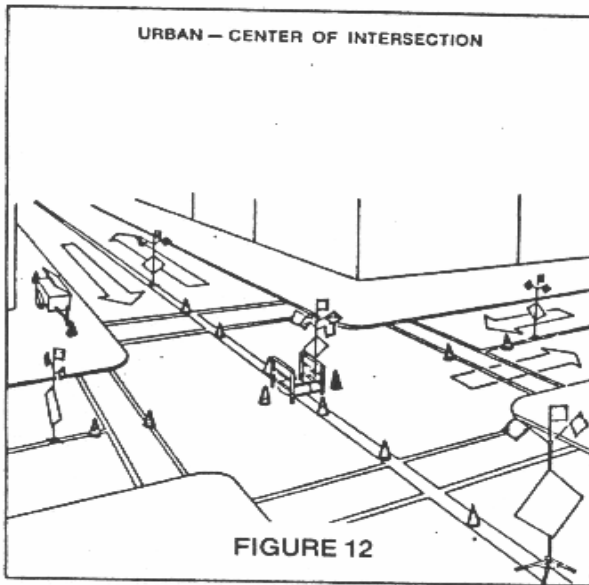


Figure 8-2. Setup of Warning Devices



**Figure 8-3. Setup of Warning Devices**



**Figure 8-4. Setup of Warning Devices**

## **Grounding and Bonding**

The telecommunications industry places Fairpoint Communications, Inc. employees in close proximity to many electrical hazards. Following approved bonding and grounding procedures as well as using proper personal protective equipment can substantially reduce risk of injury to employees and the public.

The following is discussed as it relates to grounding and bonding:

- Pole Lines
- Antenna Transmitting Stations 3-30mhz
- Power Substations

### **Pole Lines**

The following guidelines apply to the use of pole lines at work sites:

1. Power conductors and equipment are considered energized until employees can determine they are bonded to an acceptable protective ground.
2. Nonworking open wire communication lines must be bonded to an acceptable protective ground.
3. Metal power conduit on joint use poles, exposed vertical power wires, and street light fixtures below communications attachments or less than 20 inches above attachments are considered energized and are tested for voltage unless the employee can visually determine they are bonded to the communication suspension strand or the cable sheath.
4. If no hazardous voltage is indicated by the voltage test, a temporary bond is placed between the metal conduit, exposed vertical power ground conductor or street light fixture, and the communications strand. Temporary bonds must have sufficient conductivity to carry at least 500 amperes for one second without fusing.

5. Acceptable grounds for protective grounding include:
  - a. A vertical ground wire that is tested, found safe, and connected to the power system multigrounded neutral or the grounded neutral of a power secondary system where there are at least three services connected
  - b. A communications cable sheath or shield and its strand where the sheath or shield is bonded to underground or buried cable that is connected to a central office, or bonded to an underground metallic piping system
  - c. Guys that are bonded to grounds previously specified and have continuity uninterrupted by an insulator

If all preceding grounds are not available, arrays of driven ground rods where the resultant resistance to ground are low enough to eliminate danger to personnel and permit prompt operation of protective devices can be used.

6. When attaching and removing ground bonds, the first attachment is made to the protective ground. When removing bonds, the connection to the line or equipment is removed first. Insulating gloves must be worn during these operations.
7. When placing a suspension strand on joint use poles, the suspension strand must be temporarily bonded to existing grounds as described in number 5 above. When power crossings are connected on non-joint lines, the strand must be bonded to an existing ground as close as possible to the crossing as described in number 5 above. This bonding is not required if crossings are made on a common crossing pole unless there is an upward change in grade at the pole.
8. If traveling roller-type bonds are used, they must be restrained to avoid stressing electrical conductors.
9. Bonds between the suspension strand and the existing ground must be at least No. 6 AWG copper wire.
10. Temporary bonds must be left in place until the strand is tensioned, dead-ended, and permanently grounded.
11. Requirements listed in 1 through 10 above do not apply to the installation of insulated strand.

## **Antenna Transmitting Stations 3-30mhz**

The following guidelines apply to the use of antenna transmitting stations 3-30mhz at work sites:

1. Prior to grounding a transmitting antenna, the rigger in charge must prepare a danger tag signed with his/her signature, and request the transmitting technician to shut down the transmitter and ground the antenna with its grounding switch. Once notified by the transmitting technician that the transmitter has been shut down and grounded, the antenna ground switch must be tagged in the presence of the transmitting technician after the transmitting technician grounds the antenna.
2. Power must not be applied to the antenna, nor should the grounding switch be open under any circumstances while the tag is affixed.
3. If no ground switch is provided, grounding sticks must be used, one on each side of the line, and tags must be placed on the grounding sticks, antenna switch, or plate power switch in a conspicuous place.
4. To further reduce excessive radio frequency pickup, grounding sticks or short circuits must be placed directly near the transmitter in addition to the regular grounding switches.
5. In some cases, the antenna lines may be disconnected from the ground and transmitter to reduce pickup in the field.
6. All radio frequency line wires must be tested for pick up with an insulated probe before being handled with bare hands or metal tools.
7. FairPoint Communications, Inc. must ensure the transmitting technician warns riggers about adjacent lines that are or could be energized.
8. FairPoint Communications must ensure when antenna work is complete, the rigger in charge returns to the transmitter, notifies the transmitting technician in charge that the job is complete, and personally removes the tag from the antenna ground switch.

## **Power Substations**

Power utilities and more recently PCS companies are provisioning telecommunications circuits into substation environments. Technicians must take special precautions when working in such environments. At power stations

technicians can contact the station ground and the remote ground simultaneously. A hazardous voltage might exist between these two grounds. The use of proper protective equipment avoids exposure to this hazard. Similar precautions must also be taken when working within 1000 feet of substations.

The following guidelines apply to substations:

1. When installing, maintaining, and inspecting telecommunications circuits and facilities in and around power substation environments, technicians must use the following personal protective equipment:
  - a. Rubber electrical safety gloves
  - b. Approved rubber electrical safety mat
  - c. Ground bonding strap (No. 6 AWG minimum)
2. Connect a temporary ground-bonding strap first before proceeding with any work. To avoid hazardous voltages while attaching the temporary ground bond, adhere to the following steps:
  - a. Before doing any work, place an approved electrical insulating rubber mat on the floor or ground to provide isolation from hazardous voltages while attaching the temporary ground bond.
  - b. Put on rubber electrical safety gloves.
  - c. Stand on the rubber-insulating mat at all times when connecting or disconnecting the temporary ground bond.
  - d. Connect the temporary ground bond to the local ground bus. Connect the other end to the remote ground (cable shield).
3. When working inside the zone of influence (1000 Ft.) of high voltage power facilities with remotely grounded equipment, safety precautions are required when working on telephone conductors, cable shields and armors, aerial messengers, and remotely grounded metallic structures. Observe the following precautions:
  - a. Always contact the power company's representative before performing any work inside the power substation or its facilities.
  - b. Use rubber blankets and rubber gloves rated at least 20kv dielectric strength.

- c. Isolate parts of the body from contacting earth, grounded conductors, or any extension of local earth ground.
  - d. Avoid touching or stepping between remote grounded facilities and local ground or locally grounded facilities including earth, walls, fences, underground and ground mounted terminals located in cross connects, and pedestal housings.
4. Be aware that within 1000 feet of a power substation, a Ground Potential Rise condition exists. When working within this zone, cables must be temporarily grounded using procedures outlined above.
  5. Do not work with communication cables during lightning storms.
  6. Do not work with communications cables when power utility work is being conducted in the immediate vicinity.

## **Customer Work Sites**

When working in or around office buildings, private residential homes, and surrounding areas, it is necessary to safeguard employees, customers, and the general public. It is important to remember to not only protect employees, but also customers and the public from hazards. A well planned job site with well thought out placement of traffic and pedestrian controls including signs, flags, and cones, as well as proper use of personal protective equipment, all help notify the public, and help direct traffic and the public around hazards posed by company workman in the area.

The following guidelines apply to performing work on customer premises:

1. Inform the customer of what work will be done. Have the customer identify any hazardous materials or substances at the job site.
2. For work performed inside office buildings, manufacturing facilities, and other such complexes, place adequate warnings to alert those in the area where work is being performed. Warning devices might include traffic cones and warning tape to direct foot traffic away from the area, and signs to alert others of work nearby or blocked doors and exits.
3. When working on ladders, ensure area below is clear and foot traffic is directed around the area. Avoid setting up a ladder near doors or blind corners. If it must be done, ensure proper warnings are placed or another employee is set to alert others of the hazard.

4. Keep the work area neat and free of clutter, spills, and excess wire. Clean up frequently.
5. When cutting, chipping or drilling, use proper personal protective equipment and ensure others are clear of the hazard before proceeding.
6. When performing work outside the building, place safeguards to route foot traffic around the job area and to alert others of work being performed nearby.
7. Wear proper personal protective equipment, as needed, to alert others of workman in the area.
8. When using ladders and when working aloft, safeguards must be in place to route foot traffic and vehicle traffic clear of the area.
9. When working on or near roads and streets, follow traffic controls defined by state and local ordinances, and follow the guidelines included in this section.