This Safety Bulletin contains policy and procedures for working near energized electrical systems based on OSHA standards and the NYS High Voltage Proximity Act (HVPA). It applies to Department operations, including pavement maintenance; bridge maintenance and inspection; road-side maintenance; excavation; subsurface exploration; aerial lift and crane work; survey; and other operations that could cause employees or equipment to contact or enter into dangerous proximity to energized electrical systems.

TRAFFIC SIGNAL CREWС REFER TO THE SAFETY BULLETIN—“ELECTRICAL SAFETY FOR THE TRAFFIC SIGNAL UNIT”

TREE WORK REFER TO TMI

When working near electrical lines or equipment, avoid direct or indirect contact. Direct contact is contact with any part of the body. Indirect contact is when part of the body touches or is in dangerous proximity to any object in contact with energized electrical equipment. Two assumptions should always be made: (1) that lines are “live” (energized), and (2) carry high voltage. Electrical lines can only be considered “dead” when verified by the utility.

When there is any question about voltage and safe distance, the owner of the lines or equipment must be called in advance of work. As voltages increase, minimum clearances increase. Through arcing, injuries or fatalities may occur even if actual contact with high voltage lines or equipment is not made. Potential for arcing increases as voltage increases. Weather and contact with conductors such as tools can increase the possibility of becoming energized without contact.

HIGH VOLTAGE PROXIMITY ACT (HVPA)

The NYS High Voltage Proximity Act applies to electrical systems carrying 600 volts or more and requires employers to:
- Ensure employees are not placed in proximity to high voltage. Proximity is defined as within 10 feet up to 50 kilovolts.
- Inform employees of the hazards and precautions when working near high voltage.
- Post warning decals on equipment regarding 10 foot minimum clearance.
- Ensure that when an equipment operator is unable to assess clearances a “spotter” observes for clearance and directs the operator.
- Notify the utility at least 5 working days before any work begins which requires the utility to identify voltages and clearances, or de-energize, insulate or relocate lines.

POLICY

Department operations shall conform to the HVPA. Failure to comply is a violation of law and a serious breach of Department safety policy and procedure.

The first line of defense in preventing electrical contact accidents is to remain outside the minimum clearances. Because Department employees are not qualified to determine voltage, the utility shall be called to establish voltages and minimum clearances, and take appropriate action to render the work safe. Where notification cannot be made 5 days prior to beginning work, efforts shall be made to request the utility to respond immediately.

Tree crews and traffic signal repair crews shall receive specialized electrical safety training because of their frequent work near energized electrical systems. Training content, duration and frequency shall be determined by the Transportation Maintenance Division and Traffic Engineering and Highway Safety Division respectively, and shall be spelled out as a requirement in program safety directives. Training shall be held in conjunction with or supplemented by utility training, and include characteristics, hazards and precautions for high voltage electricity.

PROCEDURES

Prior to the start of a Department operation where contact with energized electrical systems is possible, the supervisor shall identify energized lines or equipment, and reference their location to prominent physical features, or physically mark the pavement beneath overhead lines with spray paint, survey tape, or other means. Their location shall be discussed at a pre-work safety meeting of all employees on the job. Contractors working with Department crews shall attend this meeting and require their employees to conform to Department electrical safety standards. New employees will be informed of electrical hazards and proper procedures.

On construction projects, the contractor shall identify and reference all potential electrical hazards and document such action to the E.I.C. Energized electrical lines or equipment will be conspicuously marked and workers will be reminded of their location by the project supervisor. New employees shall be informed of electrical hazards and proper precautions and procedures. These procedures shall be adhered to by contractors subject to the compliance procedures of the contract, including work stoppage in extreme cases. The same steps shall be taken on consultant inspection construction projects and engineering contracts using consultants.
Where there is potential for proximity or contact with energized electrical systems, utilities shall be called to decide the need to de-energize or insulate lines, or otherwise protect against accidental contact. Where there is a suspicion of low wires (under 18 feet), the utility shall be notified to verify and take appropriate action.

All electrical contact incidents, including “near misses”, shall be reported to the Regional Director, Director of Safety, and the appropriate Main Office Division Director. Refer to MAP 2.14-5, 2.14-5-1, 2.4-3-4, and EB 90-15 for reporting and investigating accidents involving injury or fatality.

HIGH RISK TASKS

Construction & Maintenance Operations:

- Prior to the start of each workday and where practical, a high visibility marker or other device shall be temporarily installed to mark overhead wires or the pavement marked beneath overhead lines with spray paint or other means. Off-site dump areas shall be reviewed for overhead wires and steps taken to identify and mark them. The supervisors will discuss electrical safety with appropriate crew members at tailgate safety talks.
- A spotter shall be positioned at the front of the paver or widener to direct truck movement and observe for overhead wires. The spotter, supervisor, and employees shall be alert for overhead wires.
- All NYSDOT dump trucks shall display a warning decal regarding electrical contact. Independent truck drivers delivering materials to Department or contractor operations shall be offered decals. All drivers will be cautioned about overhead electrical wires before beginning work. Trucks that have emptied their material shall not leave the paver until the box is down. On maintenance contracts failure by an independent driver to comply may result in removal.
- On contract maintenance work, the Resident Engineer or designee shall emphasize at the pre-paving meeting the importance of electrical safety requirements and avoiding contact with overhead wires. The Resident Engineer may stop work for contractor non-compliance, but should first ensure that the contractor is informed of procedures and given reasonable opportunity to comply.

Construction & Maintenance Equipment and Vehicles

- Where there is potential for proximity or contact with energized lines or equipment, work shall not begin until a safety meeting is conducted and appropriate steps taken to identify, mark, and warn against accidental contact. The supervisor will review operations daily to ensure compliance.
- Where the operator’s visibility is impaired, a spotter shall guide the operator. Hand signals shall be used and clearly understood between operator and spotter. When visual contact is impaired, the spotter and operator shall be in radio contact.
- Aerial lifts, cranes, and boom devices shall have appropriate warning decals.
Building Maintenance

- Employees working on Department electrical systems shall be knowledgeable about and employ when appropriate OSHA LockOut/TagOut procedures to prevent exposure to unguarded electrical systems.

UNDERGROUND ELECTRICAL LINES AND EQUIPMENT

Before installation, excavation or subsurface exploration where there exists reasonable possibility of contacting any utility lines or equipment, the Dig Safety New York (DSNY) shall be called, and a request made for identifying/marketing their location(s). DSNY can be reached by calling 811.

DSNY telephone operators will need:

- minimum of 2 working days notice prior to work beginning
- name of County, City, Village or Town
- name and number of street or highway marker
- nearest intersection at work site
- type of work
- date and time work is to begin
- caller’s name, contractor/Department name and address
- phone number for contact
- special instructions

Utilities that do not belong to DSNY must be contacted separately. DSNY may not have a complete list of utility owners. The Town, City, Village, or County is required to maintain this information and may have to be contacted.

Utilities identified shall be marked before work begins. Supervisors shall periodically refer their location to all workers, including new employees.

STRAY VOLTAGE

Employees in Bridge Crews, Traffic Signal Crews, Bridge Inspection Teams, or involved in other DOT operations have occasion to work near or with electrical systems that may emit “stray voltage”. This is a condition where relatively low voltage ‘leaks’, from poorly maintained or deteriorated electrical systems. This leaked electricity energizes other conductive objects. Under certain conditions stray voltage can result in electrical shock, and in the most severe circumstances, electrocution. The potential for such conditions exist with maintenance and repair of electrical equipment, and performing work in close proximity to such equipment.

Program management should review the potential for exposure to stray voltage, and where such exposure exists, should equip crews with voltage detectors, (ammeter, or meter capable of testing current), provide adequate training for their proper use, and develop procedures to ensure that these devices are used when appropriate.
When stray voltage is detected, the owner/operator of the system should be notified immediately, and the system de-energized until repairs are made or the problem is otherwise corrected. The need for lock-out/tag-out procedures may also be appropriate in such circumstances.

**EMERGENCY RESPONSE**

If a power line falls:

- Keep everyone at least 10 feet away.
- Use flagging to protect motorists from fallen or low wires.
- Call the utility, police or fire department immediately.
- Place “guards” around the area.
- Do not attempt to move the wire(s).
- Do not touch anything that is touching the wire(s).
- Be alert to water or other conductors present.

Crews shall have emergency numbers readily available. These numbers shall include local utility, police/fire and medical assistance.

If an individual becomes energized, DO NOT TOUCH the individual nor anything in contact with the person. Call for emergency medical assistance and the utility immediately. If the person is no longer in contact, CPR, rescue breathing or first aid should be administered immediately, but only by a trained person. It is safe to touch the victim once contact is broken or the source de-energized.

Wires that contact vehicles or equipment will cause arcing, smoke and possibly fire. Occupants should remain in the cab and wait for the utility. If necessary to jump from a vehicle, leap with both feet as far away from the vehicle as possible, without touching the equipment. Jumping free of the vehicle is the last resort.