

Safety Manual



NEW YORK
STATE OF
OPPORTUNITY.

**Department of
Transportation**

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

SAFETY MANUAL

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INTRODUCTION

This safety manual provides New York State Department of Transportation employees with information for the protection of their safety and health in the work environment. It has the force and effect of Department policy, and shall be adhered to. This manual is for the protection of your co-workers, as well as yourself. Carefully consider this when making decisions about your conformance to its provisions.

It is impossible to adopt standards and procedures for every situation that might arise on the job. There is no substitute for good judgment and common sense. However, this manual sets forth safety and health standards as a guide in the formation of and adherence to safe work habits. In situations where unusual working conditions exist, additional precautions may be required. Therefore, this document is intended to have flexibility to accommodate unforeseen or special circumstances.

These standards do not supersede or replace existing State or Federal legislation, and are subject to change as future experience dictates.

Future Safety Bulletins as they relate to Department operations are to be considered part of this manual. All future Safety Bulletins should be reviewed to keep up with new and revised workplace safety practices.

DEPARTMENT SAFETY & HEALTH POLICY

The NYS Department of Transportation is committed to an aggressive, pro-active safety and health program to ensure minimal risk for its employees, for the employees of contractors and consultants, and to protect the public exposed to Transportation operations. To achieve these goals, the Department establishes and monitors policies and procedures to ensure that internal operations and interaction with private firms, utilities, and government agencies are planned and carried out with an emphasis on safety and health. This emphasis must include personal and active involvement by every member of the Department, and originate from the commitment of executive management. Managers and supervisors have a proprietary responsibility for the safety of their employees, for the safety of those with whom the Department conducts business, and for the safety of the public. The Department invites utilities, commercial vehicle operators, rail lines, public transportation agencies, and local governments to become equal partners in ensuring that the Department of Transportation accomplishes its mission in a safe manner.

SAFETY RESPONSIBILITIES

Following are the most basic guidelines for employee safety and health in the Department. Some are general enough to apply in almost all work environments. Others apply only in a particular work environment or while performing a specific task.

EMPLOYEE

Every employee is responsible for safety and health.

Employees shall become familiar with this manual generally, and specifically with portions that directly apply.

Employees shall take every reasonable precaution to prevent accidents and injury to themselves, other employees, and the public.

Employees have responsibility to report unsafe conditions or practices to immediate supervisors.

Use of illegal drugs and alcohol is prohibited on state property and during working hours. Employees covered by Federal alcohol and drug testing legislation shall comply with all applicable requirements.

If a license is required to operate equipment, employees shall not be allowed to operate that equipment unless they possess the appropriate license. If the required license is suspended or revoked, the employee shall inform his or her immediate supervisor at once.

Employees who require certification shall be certified in accordance with the governing agency, or will not be permitted to perform in such capacities.

Every employee shall receive proper training required to safely operate any vehicle or equipment, or perform any other task safely. Every new employee shall receive safety orientation.

Personal protective clothing and/or equipment required by the Department shall be furnished by the Department, and its use strictly enforced.

Tools and equipment shall not be used for any purpose other than their intended use.

SUPERVISORY

The immediate supervisor is the "key" to a safe work environment, especially in a remote site. The immediate supervisor must be alert to safety and health hazards and must bring such hazards to the attention of employees and superiors. The supervisor must watch and guide employees to be sure they are working in accordance with safety expectations. It is critical that all employees know what is expected of them, especially safe work practices.

Supervisors must recognize potential for an accident **before** it occurs, and must constantly look for and correct unsafe acts and conditions.

Supervisors must report to management any unsafe equipment, methods, or procedures that need to be revised, and should counsel employees who continually refuse to conform to safe work practices.

Immediate supervisors shall conduct "tailgate" safety meetings, especially when a new or different task will be performed, or with new personnel. The objectives of such a meeting are to:

- Identify unusual conditions associated with the work site.
- Recognize potential hazards; discuss and recommend solutions.
- Discuss traffic control procedures.
- Check personal protective equipment and review proper use.
- Check vehicles and equipment.
- Review and discuss a recent accident or "near miss".

Specifically, immediate supervisors are responsible for the following:

- Instruct employees how to perform the work safely, correct them when they're not working safely.

- Require employees to bring unsafe conditions to their attention. When possible, correct them promptly. If this can't be done, minimize the hazard until it can be corrected. Make sure those involved know about the hazard. Advise management of the hazard and suggest appropriate corrective action.
- Investigate each injury and accident to learn why it happened and how to prevent another.
- Maintain effective communication with subordinates concerning their safety. When employees are to perform an unfamiliar task, make sure they understand everything necessary to complete the job safely.
- Treat responsibility for safety as important as responsibility for completing the work properly and on time.
- Set the example. Use all appropriate safety equipment, no matter how short a time it is required.
- Enforce use of personal protective equipment, safety equipment and safety procedures.
- Maintain the safety bulletin board(s) assuring information is current and relevant.
- Involve employees by asking questions, asking for comments and ideas. Make employees feel involved in decisions affecting their safety.

MANAGEMENT

- Furnish a work environment free from **correctable, recognized** hazards.
- Establish and require safe work practices as normal procedure.
- Include safety in job planning.
- Actively support and enforce safety policy through subordinate supervisors. Counsel and discipline employees who willfully and continually disregard safe work practices.
- Meet with subordinate supervisors periodically to review accidents, discuss safety, and explore safer methods to accomplish work.
- Purchase and provide all necessary personal protective equipment and job safety equipment.
- Insure subordinate supervisors are supervising for good safety practice.

- Set a positive example by practicing safety, and personally using all appropriate safety equipment.
- Allow subordinates time and resources to do the job safely.
- Be familiar with safety and health laws, e.g. OSHA, Toxic Substance, and the High Voltage Proximity Act, and insure compliance.
- Assure all appropriate work locations have a safety bulletin board, and that material is current and relevant.
- Oversee administration of local safety committees.

REPORTING INJURIES AND ACCIDENTS

Employees shall report all injuries and accidents to their immediate supervisor as soon as possible, including accidents involving employees operating their personal vehicles on Department business.

Employees shall also report to supervisors all "near-miss" accidents which could have resulted in an injury, death and/or property damage. The only difference between an accident and a "near-miss" is the consequences. Management must know about "near misses" to identify and correct safety problems that could have led to more serious consequences, but fortunately did not.

TAILGATE SAFETY MEETINGS

Tailgate safety meetings are informal training conducted during the normal work day by first-line supervisors for small groups of employees, usually a crew. Their purpose is to teach and remind employees of the safe way to do a job, usually one to be performed that day.

Tailgate safety training is mandatory for all Transportation Maintenance operations.

First-line supervisors are the most effective persons to conduct this training because they are responsible for crew safety and have the necessary authority. They take their crews to remote job sites and determine the extent to which employees will adhere to safe work practices.

Usually the best time for a meeting is before the normal work day. It provides positive reinforcement about job safety to think about during the ride to the job site, and throughout the day.

Tailgate safety training is most effective:

- When new employees join the crew.
- When a specific task or location poses special hazards.
- High elevation
- Working near electrical systems
- Working over water
- Work on a section of highway with limited sight distance
- Change from working on a one-way to two-way highway
 - To review a recent accident in this crew or another.
 - When a supervisor feels employees are too lax about safety.
 - After a "near miss".
 - To review traffic control procedures.
 - To review proper use of personal protective equipment.
 - To check vehicle and equipment safety.

Managers and/or Regional Safety Representatives can help supervisors develop topics for tailgate safety meetings, help new supervisors conduct the first few, and reinforce proper techniques through instruction, critique and feedback. Tailgate safety meetings must have a specific purpose or topic to be effective.

LOCAL SAFETY COMMITTEES

Transportation Maintenance policy requires Residency and Special Crew Safety Committees be in place to identify and resolve safety and health issues at the local level.

The key to success is full and equal partnership between managers and employees in day-to-day committee operation. They share the common goal of ensuring employee safety on the job.

Standards for Safety Committees

Number of Committees

One per Residency/Special Crew

Members

To be decided by local managers and safety committee members.

Number of Meetings

To be decided by local managers and safety committee members, or as needed.

Agenda

The Chairperson shall develop and post an agenda at all appropriate locations prior to each meeting.

Participation

All employees shall be encouraged to suggest topics, and a rotational system may be established to allow employee attendance.

Minutes

The Chairperson is responsible for typed minutes of each meeting, distributed to management, and to Committee members promptly after each meeting; and for posting minutes at all appropriate locations.

Responsibilities

- Review all accident reports and, if necessary, examine accident factors in detail to determine how to prevent recurrence.
- Inspect work locations to determine if safety hazards exist, and recommend corrective action.
- Be alert to unsafe equipment and equipment operation, and assure appropriate corrective action when discovered.
- Use the Regional Safety Representative as a professional safety consultant.
- Undertake all other appropriate activities to help ensure co-worker safety. Safety Committees should try to achieve consensus on their recommendations.

Management shall give serious and timely consideration to Committee recommendations.

Safety Committees can result in fewer accidents and a greater sense of participation in the decision-making that affects employee safety. Safety Committees require an environment in which management is supportive of Committee work. That support must be positive, visible and timely.

The following additional information about Local Safety Committees is taken from Safety Bulletin.

Essential Elements

Safety Committees are not popularity contests, consisting of employees with the best, most out-going personalities. Safety Committees require hard work, diligence, perseverance, and common sense. Members must “do their homework”, and have the respect of employees, supervisors and managers. They must be honest and fair. Good Safety Committee work requires the following characteristics of all its members:

- Sincerity / Genuine Commitment
- Concern for Co-Workers
- Leadership / Assume Responsibility
- Role Model / Example Setter
- Team Attitude with Co-Workers and Management

- Manage Available Resources

Safety Committees must earn the respect of their co-workers, even though at times it seems to be a thankless job.

To also be effective, Safety Committees must include management ----- who have authority to change, implement, purchase, set policy and procedure, etc. Their active and personal participation is essential, because it demonstrates genuine concern and commitment to the process.

Duties

Safety Committees should:

- Be the “eyes and ears” for safety concerns.
- Find and help correct problems.
- Be proactive and innovative ----- not just “fight fires”.
- Help investigate accidents and “near-misses”.
- Help establish and maintain safety policies and procedures.
- Help conduct facility inspections.
- Act as a clearinghouse for safety information ----- both work and home-related.
- Assist in determination of accident preventability.

Safety Committees **MUST NOT BE ENFORCERS**. Enforcement is always the job of supervisors and managers.

Application

Safety Committees are “tools” in a tool box. They have specific purpose(s), and are effective only when properly constructed and used correctly. They are not a “cure all” or a device that management can use to absolve themselves of doing anything more. Just as a wrench shouldn’t be used as a hammer, management shouldn’t use Safety Committees to do their job. They are not the entire answer to identifying and solving safety problems, but if used with reason and common sense, they can be a centerpiece for a strong safety program at the local level --- and that’s where safety really begins. Roles of Safety Committees should be clearly defined and constantly monitored to prevent disuse and abuse.

Suggestions for Success

- **Choose The Right People** - and never stop trying until you’re sure that each member deserves to be there. Never settle.
- **Don’t Fall Into Bad Habits**
 - Never have a meeting without a solid agenda.
 - Don’t meet 4 times a year just to meet a quota.
 - Don’t quit trying.

- **Rotate Leadership And Responsibility For Agenda**
- **Think “Outside The Box”**
- Be creative - share information about home safety too - because attitude/behavior at home always go to work.
- **Don’t Make Decisions to Get Items Off The Table**
- Stay with it until a solution that really has a chance of working is proposed.
- **Admit Mistakes - Trial And Error Is Not a Bad Thing**
- **Monitor New Policies And Procedures to Be Sure They Work**
- **Assign Individual Committee Members Specific Projects With Responsibility For Follow-up**
- **In The Midst of The Day-to-Day Struggle, Never Lose Sight of The End Goal - - - a Safe, Healthy Work Environment. It’s Worth It.**

Rewards

Safety Committee members can expect three levels of reward for their participation. In ascending importance, these are:

- Appreciation of Others
- Sense of Self Worth
- Potential to Save the Life of, or Serious Injury to, a Co-Worker.

SAFETY BULLETINS

It is impossible to adopt standards and procedures for every situation that might arise on the job. There is no substitute for good judgment and common sense. However, these Safety Bulletins set forth safety and health standards as a guide in the formation of and adherence to safe work habits as well as to establish Department Policy regarding these topics. In situations where unusual working conditions exist, additional precautions may be required.

These standards do not supersede or replace existing State or Federal legislation, and are subject to change.

All future Safety Bulletins should be reviewed to keep up with new and revised workplace safety practices.

ABRASIVE BLASTING

Safe use of abrasive blast equipment for cleaning parts or surfaces is based, in part, on knowing the composition of the material being removed. Many surface coverings contain hazardous levels of heavy metals, most notably lead. When the composition of material is unknown, the highest level of personal protective equipment shall be used.

Refer to the section on Compressed Breathing Air for additional information.

Equipment

Abrasive blast equipment shall be inspected before use. All fittings and hoses shall be in good condition and tightly attached.

Compressors shall deliver the air volume and pressure required to perform work effectively and safely.

The abrasive blast cleaning nozzle shall be equipped with an operating valve which must be held open manually (**Dead Man Switch**).

The air intake shall be located away from any sources of carbon monoxide or other contaminants. This will help to ensure air with adequate oxygen content and prevent adverse purifier performance.

Personal Protective Equipment (PPE)

Blasters shall be equipped with heavy gloves (canvas or leather), and aprons (or equivalent) to protect against impact of abrasives.

Foot protection shall be worn where heavy pieces of work are handled.

Abrasive blasting hoods shall be inspected for defects and in good condition before use.

Hearing protection shall be worn.

Respiratory Protection

Composition of abrasive blast material can contribute to the hazards the blaster or other employees are exposed to.

Where helpers assist the blaster, and/or other employees are working in close proximity to a blasting operation, PPE requirements shall be considered and implemented for all in the affected area if appropriate.

An air supplied respirator shall be used where hazardous materials are present in the work place (lead, silica). See Safety Bulletin on Compressed Breathing Air.

Properly fitting particulate filter respirators may be used for short, intermittent, or occasional dust exposures such as during clean-up.

Eye and face protection shall be supplied to the blaster when respirator design does not provide such protection, and to any other personnel working nearby. Eye and face protection equipment shall conform to OSHA Standards.

Hearing protection shall be used by employees in close proximity to abrasive blasting operations.

Blasting Agents

Sand - silica quartz sand shall not be used.

Black Beauty - carbonized slag. Trace amounts of heavy metals are in this product, and respiratory protection shall be worn.

Steel shot - Although not contributory to respiratory hazard by itself, field operations may involve exposure to hazardous materials (such as lead), and therefore require respirators.

Other materials such as Garnet, Glass Beads – that are specifically manufactured for abrasive blasting are allowed to be used as blasting agents.

Equipment

Hose length shall not exceed 300 ft. unless in accordance with manufacturers specifications. An accurate pressure gauge should be located at the inlet to the respirator hose.

Electric compressors tend to have marginal capacity. Use of airline coolers and heaters are to be avoided, because they cause airline pressure to drop below 6.0 Standard Cubic Feet Per Minute (SCFM). At or near 4.0 SCFM, the wearer can aspirate contaminants into the respirator, especially true during periods of heavy physical activity. Consult with an Agency Safety & Health Representative on use of airline coolers and heaters.

Housekeeping

Whenever possible, all surface coatings should be removed in a shot blast booth or outside, as it is difficult to completely capture and remove airborne dust within a building.

When abrasive blasting is performed indoors, surfaces become contaminated with dust that may contain hazardous materials. Contaminated surfaces shall be cleaned to remove as much of this contamination as possible after each abrasive blasting operation.

For surface coatings that contain hazardous materials (heavy metals), blast material and debris shall be cleaned up by using dust-free methods. Wet clean-up methods and vacuum cleaners with High Efficiency Particulate Air (HEPA) filters are recommended.

Personal Hygiene

Eating, drinking, and smoking shall be prohibited in areas where blasting is performed. Employees shall wash their face and hands before eating, drinking or smoking.

Dust accumulates in the eyebrows. Care should be taken to remove debris to prevent contaminants from entering the eyes.

ASBESTOS

This Safety Bulletin addresses Department operations involving work with asbestos or materials containing asbestos.

Asbestos is a naturally occurring crystalline mineral fiber composed mainly of iron and magnesium silicates.

These fibers can be spun and woven together or mixed directly with concrete and other materials. Qualities that make asbestos fibers so valuable to industry are high tensile strength, flexibility, heat and chemical resistance, light weight, and good frictional properties. Prior to 1981 asbestos was widely used in building materials (roofing, floor tiles, siding, plaster, and pipe insulation); bridges (sheet packing, water proofing, caulking, etc.); utilities (telephone, sewer and water conduits); and manufacturing (automotive clutch and brake pads).

Asbestos is also present in some bridge coatings. Asbestos was mixed intentionally into some bridge coatings giving a textured appearance, commonly known as "dum dum" paint. This coating first appeared in the 1960's, and when originally applied its textured appearance was visually discernible. However, at present, on many bridges today weathering or incomplete coating removal has smoothed the original texture making coatings containing asbestos visually indistinguishable from non-asbestos containing coatings.

Construction, Maintenance, Inspection or any other activities, such as bridge and deck replacement, structural steel repair, paint removal, inspection procedures which disturb coating surfaces, bearing maintenance, and repair of painted steel walkways may present potential for exposure to asbestos. Where not already determined, paint on steel bridges constructed prior to 1981 shall first be tested for presence of asbestos. Sample results shall be known prior to any work activity which could cause exposure to asbestos.

Airborne asbestos fibers are a recognized health hazard for humans. Asbestos related diseases include asbestosis, lung cancer and other related cancers.

Policy

NYS Department of Transportation employees shall not handle, remove, or disturb asbestos unless appropriately trained and, where required, certified by the New York State Department of Labor. Department employees shall not engage in asbestos abatement activities (removal or repair) unless in full compliance with OSHA Standards.

NYS DOL CERTIFICATIONS APPLICABLE TO DEPARTMENT OPERATIONS

1. Asbestos Handler Certificate --- Work on any asbestos abatement projects.
2. Inspector Certificate --- Inspection and bulk sampling of asbestos or materials suspected of containing asbestos.
3. Operations and Maintenance Certificate --- Maintenance and repair operations small in

scale and of short duration.

4. Project Designer Certificate --- Planning the scope, timing, phasing and/or methods to be utilized on any asbestos project.

Regulations

OSHA General Industry 29 CFR part 1910.1001, and Construction part 1926.1101 Standards, and New York State Code Rule 56 are intended to ensure worker safety during the performance of asbestos abatement projects. Work with materials containing 1% or more of asbestos must comply with these standards which include the following:

- Monitoring (a representative sample of personal employee exposure assessments) shall be conducted to assure exposure to asbestos is not in excess of the 30 minute Short Term Exposure Limit (STEL) of Fiber per Cubic Centimeter (F/CC) of air, and the eight hour Permissible Exposure Limit (PEL) of 0.1 F/CC.
- Safety Data Sheets (SDS's) and Labels and/or other forms of communication are required on asbestos containing products.
- Training of increased duration and complexity is required as potential exposure increases. Minimum training requirements for employees potentially exposed to asbestos (regardless of airborne levels) are as follows:
 - OSHA General Industry Standards require one hour of annual asbestos awareness training for all employees who perform housekeeping operations in buildings constructed prior to 1981, or who repair brake or clutch assemblies.
 - OSHA Construction Standards require two hours of annual asbestos instruction for employees who contact but do not disturb asbestos or potentially asbestos containing material.
 - Employees removing asbestos containing materials such as floor tiles, roofing, siding, and construction mastics; or inspecting or designing projects shall possess an appropriate NYS Industrial Code Rule 56 Certificate listed above. NYSDOL certification can only be obtained by successfully completing a course approved by the Department of Health and then filing an application with the DOL. Training received in obtaining Code Rule 56 Certification satisfies the OSHA training requirements.

Application

Transportation Maintenance:

Employees performing facility maintenance in buildings constructed prior to 1981, and employees who may contact, but do not routinely work with asbestos, shall have one hour of awareness training annually.

Employees who perform maintenance and repair work involving asbestos or potentially asbestos containing materials small in scale and of short duration shall have an

Operations and Maintenance Certificate. Examples of typical small scale projects are: removal of asbestos coatings, asbestos insulation, or asbestos gasket material on bridges; clean up of asbestos that has fallen off pipes; and repair of damaged pipe insulation. Removal of large amounts of pipe insulation (greater than 25 linear feet) shall require an **Asbestos Handler Certificate**.

All **Structures, Construction and Technical Services** employees performing bridge inspection, construction inspection, or testing on potentially asbestos containing coatings shall have two hours of awareness training annually.

Equipment Management employees performing brake or clutch assembly work, or facility maintenance shall have one hour of asbestos awareness training annually. (Training is generally required for work on clutch and brake assemblies unless known not to contain asbestos, or if the facility was constructed after 1981, or contains no asbestos.)

Previous testing in Equipment Management facilities indicates that by employing one of two approved methods, water spray or organic solvent spray wetting, overexposure to asbestos fibers does not occur during brake and clutch assembly work.

Other Operations:

Employees who inspect, test, or are otherwise involved with buildings, and field sites, including asbestos containing coatings on Bridges (**Survey, Real Estate, Planning**, etc.), shall not move, sample, or disturb asbestos or materials suspected of containing asbestos, unless they have at least an **Inspector Certificate, or have otherwise been granted permission (variance) for such activity by the New York State Department Of Labor.**

Employees working on asbestos abatement projects as asbestos handlers removing asbestos, or performing activities resulting in exposure in excess of the PEL also require:

- Medical surveillance
- Physical containment systems
- Personal protective equipment

BEST PRACTICES FOR WORKING WITH ASBESTOS CONTAINING OR POTENTIALLY ASBESTOS CONTAINING BRIDGE COATINGS

By using the following work practices, overexposure to asbestos fibers will not occur during inspection, construction and maintenance activities.

- Wet/mist the surface before disturbing bridge coatings.
- Perform grinding of painted steel using a shrouded grinder designed to accommodate and provided with a High Efficiency Particle Aerosol (HEPA) vacuum. (Any coating debris generated shall be collected with the HEPA vacuum.) Where feasible, consider alternative methods to paint removal such as chemical strippers.
- Provide training as outlined above: at a minimum, asbestos awareness training for all

employees performing Structures and Construction inspection related activities; and Department of Labor Operations and Maintenance Certification for employees engaged in maintenance activities.

- Wear hard hat, protective eyewear, and gloves.
- Respiratory protection is recommended but not required for Structures and Construction inspection related activities. Respirators are required for maintenance activities. Minimally acceptable respirators are half-face mask respirators equipped with HEPA cartridges. See Respiratory Protection Safety Bulletin.
- Wash thoroughly after working with bridge coatings.
- For employees with Operations and Maintenance Certification, the maximum area of coating removal shall not exceed 10 square feet per project, except under emergency repair circumstances. Under emergency circumstances where more than 10 square feet are removed disposable coveralls shall be provided and if possible wash facilities including showers made available.

Refer questions regarding this Safety Bulletin to the Regional Safety and Health Representative or Main Office Employee Safety and Health.

AERIAL LIFT DEVICES

This Safety Bulletin establishes Department policy and procedures for safe operation and proper maintenance of all aerial lift devices operated by Department employees, and is based on Occupational Safety & Health Administration (OSHA) and American National Standards Institute (ANSI) requirements for aerial lift devices, personal protective equipment (PPE) and water safety. It applies to all operations (and programs) which require employees to access elevated locations by use of aerial lift devices; in particular bridge maintenance and inspection, tree pruning and removal, and traffic signal work. These procedures shall be carefully reviewed by Program Management in consultation with Employee Safety & Health, as necessary, prior to work beginning, to assure full compliance with this Safety Bulletin.

Definitions

Active (Personal) Fall Protection System - *Personal fall arrest system* means a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.

Aerial Lift - A piece of equipment, extendible and/or articulating, designed to position personnel and/or materials in elevated locations.

Competent Person - "Competent person" means a person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as in their application, use with related equipment and has the authority to take prompt corrective measures.

Controlled Access Zone (CAZ) - An area where a recognized hazard exists requiring demarcation by a competent person through use of signs, wires, tapes, ropes, chains, or other devices. All protective elements of the CAZ shall be implemented prior to beginning work.

Floating Work Platform - Platform or barge capable of safely supporting workers, equipment, and materials necessary to perform work.

Full Body Harness - ANSI approved body device designed for fall protection, which by reason of its attachment to a lanyard and safety line or structure will limit a fall to 6' or less.

Lanyard - ANSI approved line designed for supporting one person, with one end fastened to a full body harness, and the other end secured to a safety line or structural member. Lanyards shall not exceed 6' in length, and preferably include a retractable or deceleration device to attenuate fall impact.

Motorized Equipment - Any specialized, motor-driven equipment used in an operation that includes, but is not limited to, aerial lift devices, fork lifts, drill rigs, cranes, excavators, etc.

Passive Fall Protection System - System used to prevent a fall from a working level that does

not require immediate action by an employee, such as guardrail or safety nets.

Positioning Device - Harness system designed to allow an employee to be supported on an elevated vertical surface, with both hands free, and limit a free fall to 2' or less.

Restraint Device - Harness system designed to keep an employee within a passive fall protection system.

Safety Equipment

All safety equipment and personal protective equipment (PPE) shall meet applicable OSHA and/or ANSI standards, and shall only be used as intended by the manufacturer for employee protection. All fall protection equipment shall be carefully inspected before each use and periodically throughout the day. Safety equipment showing any sign of mildew, torn or frayed fiber or fabric, burns, excessive wear, or other damage or deterioration which could cause failure shall be permanently removed from use. Full body harnesses, lanyards, safety lines, and all other active fall protection equipment shall be properly maintained and stored in a dry location, out of sunlight, and away from caustics, corrosives or other materials which could cause failure.

Hard hats and full body harnesses shall be worn by employees in the bucket or on the platform of any aerial lift device while in operation. Because aerial lifts have passive fall protection (bucket or rail system), the intent of a full body harness is to keep each occupant in the device upon impact, not to attenuate a fall from it. Loose-fitting clothing shall not be worn while working in any aerial lift device. Working in or on aerial lift equipment in the ROW shall require approved high-visibility apparel conforming to the Safety Bulletin on High Visibility Apparel and Hard Hat Policy. Employee attire shall conform to Safety Bulletin on Work Clothing Guidelines.

When working in locations where you could fall into the water, regardless of fall protection, refer to the Safety Bulletin on Working in Proximity to Water.

Aerial Lift Equipment

Aerial lift devices shall conform to ANSI Standards applicable to the type of equipment being used - - bucket truck, work platform, underbridge inspection vehicle, portable and/or self-propelled personnel lift. Aerial lift devices shall only be used for the purpose(s) intended by the manufacturer. All manufacturer and Office of Fleet Administration & Support (OFA&S) recommendations and warnings regarding operation, capacity, and specific safety precautions shall be strictly followed. Permanent labeling must be conspicuously posted to indicate lifting capacity and travel height.

Only devices approved for lifting personnel shall be used by employees to reach elevated locations. Loaders, fork lifts, or other material lift devices shall not be used to transport employees to elevated locations nor as work platforms.

Maintenance inspections of aerial lifts shall be made every three months by OFA&S in

accordance with M.A.P. 7.11-17, Inspection of Aerial Lift Devices. Modification shall not be made to any aerial lift device without written approval of OFA&S. Buckets and bucket liners shall not be cut or drilled.

Operating Procedures

Lift equipment shall be inspected and controls tested daily before use. Under Bridge Inspection Units (UBIU's) shall be operated in accordance with [TMI-12-03 - NYSDOT UNDER BRIDGE INSPECTION UNIT \(UBIU\) TRAINING PROGRAM](#). On boom devices, one crew member trained in the operation of the ground controls shall remain readily available on the ground at all times while the lift is operating. Only properly trained employees shall operate any aerial lift. Ground controls shall not be operated without permission from the employee(s) "in the air," except in emergencies.

Before extending the boom or raising the platform, outriggers (if the vehicle is so equipped) shall be positioned properly at the truck level. Outriggers shall be placed on pads, blocking, or other solid surface, and shall not be used to level the vehicle. The parking brake (and micro brake if so equipped) shall be set and wheel chocks in place. Sufficient overhead clearance shall be checked before raising any aerial lift. For underbridge units, adequate clearance beneath the boom shall be assured.

Employees shall keep both feet on the bucket floor while the bucket is moving and work is being performed. Employees shall not attach their harness to an adjacent pole, structure or tree while working from the bucket, but shall remain connected by full body harness and lanyard to the manufacturer's approved anchorage. Employees required to leave the bucket to gain access to a work location shall maintain 100% fall protection by connection of a lanyard to a safety line, structure or tree capable of supporting the employee(s). Tree spikes shall not be worn in the bucket while performing work. Buckets shall have an inside and outside step (portable "E-Z step" or step through features, for example).

Work platform lifts shall have a top and mid rail and kick plate, and a manufacturer's approved anchorage point for each person to attach a full body harness and lanyard to the platform. A full body harness and lanyard shall be used by each employee on the platform. Employees shall keep both feet on the floor of the platform; shall not sit or climb on the railing; or use planks, ladders, or other devices to raise the working height. The gate shall be closed before raising the work platform.

The carrier portion of an aerial lift unit shall not be moved (travel) while the lift is out of its cradle, unless the unit is designed to do so (underbridge unit, for example). When any aerial lift is moved with an employee(s) in the air, they shall be aware of the move and be in communication with those moving the vehicle. Employees shall not ride in the bucket or work platform from one work location to another. Generally, for transport the boom shall be properly cradled and the outriggers properly stowed.

Tools, parts or any materials shall not be dropped or thrown from the bucket. When using welding or heating equipment from the bucket or platform, the vehicle shall be protected from

sparks or slag and special care taken to protect or remove flammables.

For the underbridge unit, radio communication between employee(s) in the bucket and the vehicle operator shall be tested prior to using the unit. If the communication system is not working properly, work in the bucket shall not be started or shall cease. Alternate use of bullhorns or portable radios is acceptable in the event radio communications are disrupted during operations.

Positioning of any vehicle on the highway pavement or shoulder requires traffic control procedures in accordance with the Federal Manual of Uniform Traffic Control Devices & NYS Supplement, and Department Highway Work Zone Safety Policies and Procedures.

Aerial Lift Devices on Floating Work Platforms and Barges

When using aerial lifts on floating work platforms and barges, a Site Safety Plan shall be developed to address the following:

- Competency of operator(s)
- Load rating capacities
- Design consideration to eliminate risk of capsizing
- Motorized equipment capabilities / limitations
- Fall protection requirements and other required PPE
- Use of CAZ or perimeter guarding
- Method(s) of anchoring equipment
- Lighting (if necessary)
- Access to barge / platform
- Communication devices
- First aid
- Emergency notification
- Conformance to all other appropriate OSHA/ANSI and Department safety requirements

Personnel, equipment, and materials shall not exceed load rating capacity or cause risk of capsizing.

Only aerial lifts with manufacturer approval to work on floating vessels shall be used. Aerial lifts shall be positioned as close to the center of the platform or barge as feasible. A CAZ or perimeter guarding shall be in place. Aerial lifts shall be securely anchored / tethered if required by the manufacturer.

Employees walking or working on unguarded decks of floating work platforms shall be protected with proper fitting U.S. Coast Guard-approved life jacket or buoyant work vest.

Electrical Safety

When working near electrical lines or equipment, avoid contact. Always assume that lines are "live" and carry high voltage. Electrical lines can only be considered "dead" when verified by the utility.

Department operations shall conform to the High Voltage Proximity Act, which applies to electrical systems carrying 600 volts or more and requires employers to:

- Ensure employees are not placed in proximity to high voltage (within 10' up to 50 kilovolts).
- Inform employees of the hazards and precautions when working near high voltage.
- Post warning decals on equipment regarding 10' 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. The utility will identify voltages and clearances, or de-energize, insulate or relocate lines.

As voltages increase, minimum clearances increase and potential for arcing increases. Injuries or fatalities may occur even if contact is not made. Weather and contact with conductors such as tools can increase the possibility of arcing. Because Department employees are not qualified to determine voltage, the utility shall be called to establish voltages and minimum clearances, and to render the work safe. Where prior notification cannot be made, an attempt shall be made to have the utility respond immediately.

Tree crews and traffic signal crews shall receive specialized electrical safety training due to frequent work near energized electrical systems. Training shall be conducted, preferably in conjunction with or supplemented by training from local utility companies, and include characteristics, hazards and precautions for high voltage electricity.

Prior to the start of an operation where contact with energized electrical systems is possible, supervisors shall identify energized lines or equipment, reference their location, and discuss at a pre-work safety meeting with all crew members.

For additional information regarding electrical safety precautions, refer to the Safety Bulletin on Electrical Safety.

Awareness & Training

Regional managers responsible for operations which require using any type of aerial lift device shall ensure that employees involved in such operations are aware of this document and receive initial and periodic refresher training in accordance with current ANSI requirements A92.5 for "Boom-Supported Elevating Truck Platforms", A92.2 for "Vehicle Mounted Elevated & Rotating Aerial Devices," and A92.8 for "Vehicle Mounted Bridge Inspection Devices". (Also refer to electrical safety training requirements above). Supervisors shall conduct brief daily tailgate safety meetings to review special job features, traffic considerations, and appropriate safety precautions.

Related References

MAP 7.11-17 Inspection of Aerial Lift Devices
ANSI/SIA A92-2 Vehicle Mounted Elevating & Rotating Aerial Devices
ANSI/SIA A92.5 Boom-Supported Elevating Truck Platforms
ANSI/SIA A92-8 Vehicle Mounted Bridge Inspection & Maintenance Devices

Refer to the following Safety Bulletins for additional information:

Work Clothing Guidelines
Fall Protection
Working in Proximity to Water
High Visibility Apparel & Hard Hat Policy
Rental / Leased & Surplus Equipment
Railroad Safety
Electrical Safety

BACKING VEHICLES AND EQUIPMENT

This Safety Bulletin is intended to prevent vehicle and equipment backing accidents. It makes a distinction among automobiles, trucks and equipment, and places a higher level of responsibility on operators as vehicle size increases and visibility to the rear of the vehicle decreases. However, there are general backing rules which apply to all vehicles/equipment and shall be followed.

General Rules for All Vehicles

When in doubt, do not back up. Seek assistance from reasonably available co-workers.

Use all rear-view mirrors before and during backing. Use the rear window if unobstructed.

Back slowly and cautiously, keeping the vehicle in complete control.

If a backing maneuver is too tight, do not back-up. Find another means to accomplish the task. Park in another location or remove the obstacle.

If backing is unavoidable, back only as far as necessary to accomplish the intended maneuver.

Backing into traffic requires additional precautions - - - a flagger or spotter may be needed and, in some cases, additional traffic control may be required.

When parking in a parking lot, back into the space, and leave driving forward.

When parallel parking, try to maintain enough room in front of the vehicle to avoid backing when leaving.

When parking a vehicle that later must be backed, the operator may place a cone behind the vehicle to maintain clearance and serve as a reminder to check behind the vehicle before backing.

Trucks (including pick-ups, vans, tower and utility trucks, dump trucks, and other vehicles with limited or obstructed visibility to the rear).

Sound the horn before backing. If the vehicle's horn is not operating, it shall be reported to a supervisor and a Vehicle Trouble Report (EM-3) completed.

Any available employee shall direct (spot for) the driver of a backing vehicle, whether or not he or she is a passenger. When using another employee as a spotter, the driver shall establish eye contact and a clear understanding through verbal communication with the spotter to confirm the spotter's intention to assist before proceeding. The driver shall keep the spotter in sight at all times while backing. If the driver loses sight of the spotter, he or she shall stop immediately, and exit the vehicle to establish the spotter's location.

If another employee is not available, the driver shall exit the vehicle before backing to check for clearance, perhaps more than once; and may have to walk completely around the vehicle to do so.

Be alert for overhead lines, guy wires, or any other overhead obstructions.

Equipment

Certain equipment operations are not conducive to all backing rules. For example, it is impractical and possibly dangerous to use a spotter for a loader filling trucks during snow and ice work. Another example is a grader operation where back and forth movement is constant. In such cases, operators shall use extreme care and good judgment and observe all applicable backing precautions.

Operators shall always remain aware of the presence of any pedestrian worker(s) and/or other vehicles/equipment in close proximity. In all situations requiring backing the tasks shall be evaluated as to whether a spotter is warranted, to insure the safety of the operator and any employee(s) in the vicinity. At all times, while backing any vehicle or piece of equipment out of the garage or residency, any available employee shall assist.

Back-up Alarms

Various pieces of equipment utilized by the Department may have a back-up alarm or rear video camera system. This may include a rear mounted camera or radar system that activates an alarm when an object is within the area scanned by the radar. When any piece of equipment or vehicle, whether purchased, leased, or obtained through a shared service agreement is used, Department Policy **shall** be that the rules governing the use of a spotter outlined in the Section under **TRUCKS** shall apply.

Equipment back-up devices which are not functioning shall be reported to a supervisor and a Vehicle Trouble Report (EM-3) completed.

Snow & Ice Operations

Careful planning can minimize the need for backing during snow and ice work. Managers shall review their snow and ice operations annually to ensure that all options have been explored to minimize or eliminate backing, and identify those situations and/or locations where backing is unavoidable. When backing is unavoidable and visibility is poor during **actual** snow and ice operations, the wing person is not required to exit the truck to direct the backing maneuver; nor is the operator, if alone, required to exit the truck before backing. In such cases, the operator shall use extreme caution, and back slowly and deliberately. Backing in/out of a garage, salt barn, hopper hanger, etc or during any other **non**-snow and ice activity requires use of an available spotter any time of the year.

Any employee who violates the Department vehicle backing policy will be subject to counseling or progressive discipline.

Operators shall make every reasonable effort to avoid backing, and are always fully responsible for the vehicle's safe operation.

BENCH GRINDERS

Shall be permanently secured to a bench or stand.

Angular exposure of the grinding wheel periphery and sides for safety guards shall not exceed 90 degrees, and the exposure shall begin at a point not more than 65 degrees above the horizontal plane of the wheel spindle.

Work rests shall be kept adjusted closely to the wheel with a maximum opening of 1/8 inch to prevent work from jamming between the wheel and rest.

Adjustable tongue guards shall be installed and adjusted to a maximum distance of 1/4 inch from the wheel.

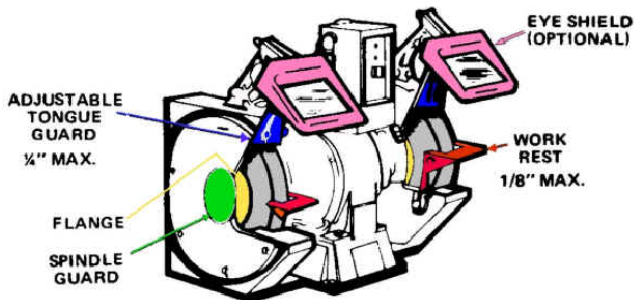
Before mounting, wheels shall be visually inspected for defects. A 'ring test' shall be performed to detect cracks.

How to Perform a Ring Test on a Grinding Wheel

One method of grinding wheel inspection is called ring testing. OSHA, ANSI and the grinding wheel manufacturers require this method of grinding wheel inspection. It must be performed BEFORE the wheel is mounted on a grinding machine. Ring testing depends on the damping characteristics of a cracked wheel to alter the sound emitted when the wheel is tapped lightly. It is subject to interpretation by the inspector and is primarily applicable to vitrified bonded wheels. To perform the ring test, wheels should be tapped gently with a light nonmetallic implement, such as the handle of a screw driver for light wheels, or a wooden mallet for heavier wheels.

- **Tap wheels about 45 degrees each side of the vertical line and about 1" or 2" from the periphery. Rotate the wheel 45 degrees and repeat the test.**
- **Large and thick wheels may be given the ring test by striking the wheel on the periphery rather than the side of the wheel.**
- **A sound and undamaged wheel will give a clear tone. If cracked, there will be a dead sound and not a clear ring and the wheel shall not be used.**
- **Wheels must be dry and free of sawdust when applying the ring test, otherwise the sound may be deadened. The ring test is not applicable to certain wheels because of their size, shape or composition.**

Checklist for Abrasive Wheel Equipment Grinders¹



Standard 29 CFR 1910	Description	YES	NO ²
<i>From the Abrasive Wheel standard</i>			
215(a)(2)	Do side guards cover the spindle, nut and flange and 75% of the wheel diameter?		
215(a)(4)	Is the work rest used and kept adjusted to within 1/8-inch (0.3175cm) of the wheel?		
215(b)(9)	Is the adjustable tongue guard on the top side of the grinder used and kept to within 1/4-inch (0.6350cm) of the wheel?		
215(d)(1)	Is the maximum RPM rating of each abrasive wheel compatible with the RPM rating of the grinder motor?		
215(d)(1)	Before new abrasive wheels are mounted, are they visually inspected and ring tested?		
<i>From other OSHA standards</i>			
22(a)	Is cleanliness maintained around grinders?		
94(b)(2)	Are dust collectors and powered exhausts provided on grinders used in operations that produce large amounts of dust?		
133(a)(1)	Are goggles or face shields always worn when grinding?		
212(b)	Are bench and pedestal grinders permanently mounted?		
304(f)(4)	Is each electrically operated grinder effectively grounded?		
305(g)(1)(iii)(A)	Are fixed or permanently mounted grinders connected to their electrical supply system with metallic conduit or other permanent method?		
305(j)(4)(ii)(F)	Does each grinder have an individual on and off control switch?		

Footnotes:

¹ Extracted from OSHA Publication No. 2209. This check list does NOT include ALL elements of 29 CFR 1910.215; it is a only a guide.

² A mark in this column indicates a need for corrective actions.

CELL PHONES / TEXT MESSAGING DEVICES

Hand held cellular telephones and other electronic devices, such as text messaging devices, shall not be used during operation of a vehicle or equipment while on State business. This includes State vehicles/equipment, leased or rental vehicles/equipment, and personal vehicles used while on State business. It applies to personal devices, and those provided by the Department or contractors. This policy is consistent with, and in some cases, more stringent than, NYS Law.

Drivers may use “hands-free” telephones while operating vehicles/equipment. In the absence of a hands-free device, employees shall park in a safe, legal location to initiate or respond to calls. In all cases, employees shall remain attentive to their surroundings and avoid distraction by using any electronic device while driving.

In addition:

- Cell phone calls shall be as brief as possible, and initiated or received by a passenger, if present.
- Drivers shall not attempt to hand write messages while the vehicle/equipment is moving.
- “Hands-free” calls shall be initiated or received while driving only if it does not interfere with safe operation of vehicles/equipment.
- Hand held units may be used for emergencies.
- Text messaging is prohibited by drivers during operation of vehicles/equipment.
- Callers to cell phones and senders of text messages who know their intended receiver is operating a vehicle/equipment should carefully consider the importance of initiating communication.
- Electronic devices of any type shall not be used by employees at Department or contractor work sites, including field and facility locations while:
 - In close proximity to working machinery, traffic, or other hazardous operations.
 - In potentially hazardous atmospheres or while fueling vehicles/equipment.
 - Performing traffic control, spotting for backing vehicles, or other safety sensitive operations.
- Use of any electronic device is prohibited while driving through an active highway work zone.

Employees are required to maintain absolute attention to the operation of vehicles/equipment (and other tasks requiring their undivided attention). Too many traffic accidents, many in work zones, are caused by driver inattention from numerous distractions. Cellular phones and text messaging devices are distractions. Radio or telephone communication necessary to conduct Department operations while driving vehicles/operating equipment, shall be kept to a minimum.

Earphones and Other Electronic Communication Devices

Department of Transportation employees shall not use any type of earphone (radio, MP3, or other personal listening device) in one or both ears while operating vehicles/equipment on State business, while working on or near dangerous operations, and while working within the highway right of way. This prohibition applies to all employees (whether operating equipment or not) in areas where vehicles/equipment are operating, including all field and facility locations.

This prohibition does not apply to hearing aids, approved hearing protection devices (personal protective equipment) to control noise, or earphone-type, two-way systems required for safety-related communication (for ex., traffic control).

CHAIN SAW SAFETY

Operation of chain saws is inherently hazardous. Potential for injury can be minimized by use of proper personal protective equipment (PPE) and safe operating procedures. This Safety Bulletin addresses OSHA requirements for PPE and safe operating procedures for chain saw work. Also refer to appropriate program safety manuals for additional information.

Program managers and supervisors are responsible for implementation, administration, and enforcement of this policy, with technical assistance from Employee Safety and Health.

Policy

Employees and supervisors shall be trained in the safe operation and maintenance of chain saws. All tree crew members shall have CPR/First Aid training. For all other operations involving use of chain saws, it is strongly recommended that at least two people in the crew be knowledgeable in First Aid/CPR. Employees shall follow all manufacturer and Department safety procedures. All appropriate PPE shall be used by employees operating chain saws, including hard hat; chaps; and eye, face, foot, hand and hearing protection.

Training

All employees shall be trained on chain saw safety prior to the use of a chain saw. Minimally the training shall consist of a review of the safe operating procedures contained in this safety bulletin.

Equipment

All chain saws placed in service shall meet all requirements of ANSI B175.1-2000. Chain saws shall be equipped with at least two separate anti-kick back features. Chain brake, low kick back chain, reduced kick back bar, or nose guard are among current devices available.

Required Personal Protective Equipment

Chaps – Full wrap around leg protection apparel constructed of cut resistant material complying ASTM F1897 - 08 Standard specifications for leg protection for chain saw users.

Foot Protection - Tree crew employees shall conform to OSHA logging standard requirements and Department policy regarding safety footwear.

Hearing Protection - Any approved muff, plug or semi-aural protectors that can be properly worn with other required PPE.

Face Shield - Wire mesh or clear plastic designed for impact protection.

Safety Glasses - Must have side shields and be designed for impact protection.

Hand Protection - Appropriate gloves should be worn, when possible.

Fueling and Starting

Store and carry gasoline in approved safety cans. (Refer to Transporting Gasoline and Diesel Fuel Safety Bulletin.)

Use a funnel or flexible hose fitted to the container when fueling saws.

Clear the area around fueling site of flammable material.

Do not fuel saw with engine running, or start the saw in the same spot where it is fueled.

Allow engine to cool before refueling.

After fueling, wipe chain saw clean before restarting.

Keep a fire extinguisher available when refueling.

Place saw on the ground or other firm surface to start. Make sure chain can not contact ground or other objects.

General Chain Saw Safety

Never work alone with a chain saw.

Never remove nose guard or chain brake.

Chain brake must be engaged while starting.

Keep engine free of saw dust.

Clear away brush, rocks, fencing, etc. in the work area which might hinder movement.

Always establish good footing.

Keep personnel clear from areas of falling trees or rolling logs.

Be alert for nails, wire, metal taps, etc. in trees.

Keep cutting speed under control to avoid cutting too deep or at an improper angle.

When moving with a saw, it should be grasped firmly in one hand and carried at the side with bar pointing backwards. Special caution is necessary when the engine is running.

Chain brake should be engaged during transport.

Look to the side before turning around. Face and hearing protection and engine noise will limit the operator's ability to know if someone is close.

Stop the saw when doubtful about safety.

Secured racks, boxes, bar holsters or sheathing, or other means shall be used for transporting chain saws.

A First Aid kit shall be immediately available.

CULVERT / SUBSURFACE STRUCTURE ENTRY

Department staff regularly inspects and/or perform maintenance and repair work in culverts or other subsurface structures as part of the state transportation infrastructure. While size, configuration, and conditions vary widely, this document reinforces minimum requirements for entry into any culvert/subsurface structure that constitutes a “confined space” (refer to Safety Bulletin and Policy below), or requires conformity to other applicable OSHA standards or Department policies. It also establishes additional guidelines to maximize the safety of Department staff performing such work.

Policy

While OSHA is silent on “culvert entry”, there are relevant OSHA standards and Department policies which apply to work activity within culverts/subsurface structures. They include, but are not limited to, Permit Required Confined Space Entry, Working In Proximity to Water, Respiratory Protection, and Work Clothing Guidelines. Most culverts/subsurface structures do not meet the OSHA definition of a confined space, nor necessitate most of the precautions below. Culverts/structures with unrestricted entry/exit, short in length, dry, having ample daylight and draft, structurally sound, and otherwise free from recognized hazards, may not require special precautions. Common sense and good judgment dictate appropriate action.

CULVERTS/SUBSURFACE STRUCTURES THAT MEET ANY OF THE FOLLOWING REQUIRE CONFORMITY WITH PERMIT REQUIRED CONFINED SPACE ENTRY SAFETY BULLETIN.

- Part of a sanitary sewer system.
- Diameter/opening size requiring entrant(s) to crawl. Entry will not be made into culverts/structures with a diameter/opening size of 24" or less.
- So lengthy that a co-worker outside is unable to see the entrant(s) or maintain unassisted voice contact.
- Contain hazardous materials or substantial quantities of decaying organic material.
- Require work which could create an atmospheric hazard, i.e., fumes from welding, painting, relining with resins or other curing material.

Entry Is Prohibited Into Culverts/Subsurface Structures Which Are:

- Twenty-four (24) inches or less in diameter/opening size. For systems that increasingly narrow, entry is prohibited beyond the point where diameter/opening size is 24" or less. In elliptical structures, entry should not be made where the mid-vertical height is 24" or less.
- Plugged by debris snares or other obstructions which could release substantial water into the structure if the obstruction is removed or loosens; or in cases where the force of running water is strong enough; or where combination of water depth, current and incline hinders or prevents stable footing.

- In culverts where the entry is being performed because of a suspected failure in the integrity of the structure, a Licensed Engineer (Transportation Maintenance or Structures), will verify that the culvert is safe for entry.
- Deemed by Regional Program Management or Regional Safety and Health Representative to be unsafe to enter.

Portable generators or other power equipment which emit carbon monoxide or diesel exhaust shall not be operated within the culvert or structure, or in any areas adjacent to the structure where air movement could cause fumes to enter.

Hard hats, eye/face protection, and appropriate safety footwear shall be worn. Gloves may also be required. Department Work Clothing Guidelines shall be followed.

Training shall be conducted for entry into “confined spaces” and/or any other work aspect governed by Department safety policy.

Guidelines

Regional Program Managers and the Regional Safety Representative should identify and categorize all culverts/subsurface structures in the Region by degree of risk, and based on this document, establish appropriate precautions for each category, as necessary. Categories might include: those where entry is prohibited; those considered confined spaces; those which are not confined spaces, but present other potential hazards; and those which require no special precaution. The categories should be reviewed and updated periodically. A checklist for each category containing appropriate precautions would simplify implementation.

The following should be considered prior to entry into a culvert or subsurface structure not classified as a confined space, but with known or potential hazards such as harmful fumes, potential for drowning, contact with energized electrical equipment; or physical hazards due to structural deficiencies, sharp objects, scour, etc.

- Entry should not be made without on-site presence of at least one co-worker outside the culvert.
- Available blueprints or other schematics should be reviewed prior to entry to learn about layout and potential hazards.
- Where work is to be done inside (vs. inspection only), debris should be removed.
- Portable lighting systems, helmet lamp and/or flashlight should be provided. Redundant systems are preferred, in case of failure.
- For some structures, air quality should be monitored for oxygen deficiency or presence of harmful contaminants prior to and during entry. The Regional Safety Representative should be consulted for testing criteria and for assistance in conducting air quality monitoring.
- Voice and/or assisted communication should exist among entrant(s) and co-worker(s) outside. Cell phones and radios are options. At least one entrant should have available an audible signal/alarm device in case of emergency, for example, canned compressed air alarm.

- If structure failure is known or suspected, extreme caution should be exercised regarding decisions to enter. Alternate methods, such as use of consultants or remote cameras, should be considered.
- All terminal ends should be checked for obstruction, and determined to be passable for safe exit/entry at each in an emergency.
- When water is above ankle height, boots or waders should be worn. Waders and boots with toe protection may be required. Water depth and current should be considered for applicability of Safety Bulletin on Working in Proximity to Water. Additional dry clothing is desirable.
- Ice poses special hazards of slippery conditions and/or falling objects, and should be considered an important risk factor.
- Culverts sometimes terminate at a known “drop-off”, or otherwise present fall hazards. Entrants should carefully approach known “drop-offs”. Probes can help detect scour and other elevation changes, and facilitate balance. Rigging a safety line as a handhold or tie-off point can minimize fall hazards, and be used to attach and pull along portable lighting and/or air monitoring equipment.
- When conditions warrant and culvert length is short enough to assure retrieval, entrants may “tether” by safety rope to an area outside the culvert/structure.
- Where a structure has never been entered by current DOT forces, and no blueprints, schematics exist; or there is concern for physical integrity of the structure, and therefore the need to inspect; consideration should be given to use of consultant services or remote camera before entry by Department forces. Consultants should be asked to submit an entry safety plan prior to work beginning.
- Time of year is critical for water level and soil stability, and entry should be postponed until adverse effects of spring melt/runoff have subsided. Water levels and soil water content should be as low as possible.
- Where feasible, notify local emergency services of intent to enter high risk structures.
- Employees should be trained appropriately, based on known or suspected conditions prior to entry.

Related References

The following documents should be considered for application prior to entry of any culvert/subsurface structure; and incorporated into entry safety plans, as appropriate.

Permit Required Confined Space Entry
 Working In Proximity to Water
 Respiratory Protection
 Working Near Energized Electrical Lines & Equipment
 Work Clothing Guidelines
 Appropriate Program Safety Manuals

DETERMINING INJURY & VEHICLE ACCIDENT PREVENTABILITY

There has always been and will always be questions and concerns about the criteria used to define and determine the preventability of personal injuries and vehicle accidents. National occupational safety and health standards are the most rigid, and traditionally have held that most workplace accidents are preventable by someone (some action or inaction) at the employee, supervisor, manager and/or corporate level.

The Department applies a very broad definition of “preventable” to assess accountability at all these levels in the organization. This approach does not automatically assume that employee(s) at the operator level, for example, have all or any of the responsibility. It is expected that those at all levels in the respective chain(s)-of-command recognize and accept their appropriate accountability for injuries and vehicle accidents.

This Safety Bulletin is to provide guidelines so that D.O.T. standards for determining preventability are applied consistently and fairly.

Definition

Preventability can not be defined in a sentence, because there are a number of different aspects. Important is the fact that “preventable” does not mean “blame” or “fault”. It means “**accountable**”. The result does not have to be punitive, and most often is not. In general, the Department uses discipline in less than 1% of all preventable accidents. Backing is the exception where discipline for preventable vehicle accidents is more often considered a necessary part of the corrective action.

A preventable accident is one in which one or more employees, supervisors, and/or managers have some responsibility for causing or failing to prevent or contributing to, when they were aware of possibility of higher than normal potential for an accident to occur. It may also be preventable when employees, supervisors and/or managers should have known about a potential hazard but didn't. In such cases, we look to program or corporate accountability for, as an example, not having adequate or up-to-date policies and procedures in place. Where any or all of these conditions exist, the accident is deemed preventable. In defining preventable, we intend to include everyone and everything under the purview of Department operations reasonably associated with the circumstances under which the accident occurred. To do otherwise is to allow a condition to exist which may cause another mishap.

Clarification & Guidelines

The Department adopts a very conservative position regarding preventability, and assumes that most accidents are preventable. However, we also operate on the premise that each case must be judged on its own merit, and that reasonableness and fairness must be practiced by those deciding the responsibility of the Department, and/or employees operating under its auspices.

Proper assessment of preventability relies on the active, personal involvement and sound judgment of supervisors and managers at the local level, often with the guidance of a safety professional (if nothing else, acting as a neutral consultant). Preventability usually can only be correctly determined after an appropriate, and in some cases, extensive investigation is conducted. In most cases, review by supervisors and managers at the local level is all that is needed to properly assess whether the accident was preventable. In some situations, however, the decision needs to be elevated through the Regional chain-of-command, perhaps to the Regional Director; and in very few cases, may be referred to the Main Office Program Management / Safety Program level for consideration. While there is at times some difference of opinion in determining preventability, this system will usually result in sound decision making, especially when the process is inclusive. Most important is that everyone involved understands and accepts the premise that a determination of preventability does not mean simply assessing “blame” or “fault”, but is rather a process of determining what actually happened and why, with the primary purpose of trying to prevent it from happening again.

Certainly, there are clear-cut cases where accidents are caused by violation of well-established, well-known safety policies and procedures, motor vehicle law, or even common sense. In some cases, they are caused by an individual with a long-standing record of inattention to and/or violation of safety rules. Determining preventability in these instances is usually easy. In most circumstances, however, this is not the case. Usually circumstances are more complex (gray), and require careful scrutiny and thorough accident investigation before a decision as to preventability can be made. In a few cases, even after extensive review, a question may remain whether the accident was truly preventable, and by whom. For the most part, in fact, we find that accountability for accidents can be traced to more than one individual employee, supervisor, manager or program.

Everyone, at all appropriate levels, must be accountable and must accept their responsibility for an accident, and more importantly, for working to prevent recurrence. In the end, prevention of future accidents is the ultimate reason for accident investigation. This can only be properly accomplished if there is an honest attempt to answer the “who, what, when, where and why” questions regarding a personal injury or vehicle accident.

DISPENSING MEDICATIONS

Department policy prohibits dispensing legal drugs and medicine on State property and during working hours. This policy is designed to prevent employees with an acute sensitivity or allergic reaction to certain medicine or drugs from receiving any product that might adversely affect their health. This includes products such as aspirin, cough syrup, antacids, antihistamines, and allergy medicines. These items shall not be in Department first aid kits.

The Department does provide first aid supplies. However, drugs and medicines are not categorized as first aid, and shall not be administered by other than health professionals. This policy does not preclude employees from having a personal supply of prescription or non-prescription legal drugs for their own use, as long as such use does not impair their ability to perform their duties, nor compromise their ability with regard to alcohol and drug testing requirements.

NOTE: While legal drugs are not prohibited, employees must always be fit for duty. Supervisors should have general knowledge of employee use of prescription drugs when subordinates' duties impact on safety and health, and/or have been identified as 'safety sensitive', and shall treat such knowledge confidentially. It may be necessary for an employee to obtain medical certification that a substance will not impair his or her fitness for duty. For more information, refer to the Department Drug-Free Workplace Policy.

Use of illegal drugs is prohibited.

ELECTRICAL SAFETY

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 CREWS REFER TO THE SAFETY BULLETIN ON 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

General

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 Safely New York (DSNY) shall be called, and a request made for identifying/markings 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.

ELECTRICAL SAFETY PROCEDURES FOR THE TRAFFIC SIGNAL UNIT

This document details electrical safety procedures for Traffic Signal employees, ensures compliance with Occupational Safety and Health Administration (OSHA) and National Electrical Code (NEC) standards, and establishes minimum requirements for 'qualified' employees. Only qualified Traffic Signal employees are permitted to work on energized electrical equipment.

Requirements for working on electrically energized traffic signal equipment were established after a thorough hazard assessment by Program Management and Employee Safety, and are specific for that equipment and type of work. These requirements shall not be applied to other types of electrical work. **The method for all other electrical work in the Department is always to de-energize equipment in accordance with Safety Bulletin on Lockout/Tagout Procedures, and Safety Bulletin on Electrical Safety.**

Except where specifically noted in the section on Personal Protective Equipment (PPE), all existing Department policies and requirements remain in effect including: High Visibility Apparel & Hard Hat Policy, Fall Protection, Aerial Lift Devices, and Railroad Safety.

Definitions

Insulating Aerial Lift Devices: Insulating aerial lift devices shall meet the requirements of ANSI/SIA A92.2-2009, Vehicle-Mounted Elevating and Rotating Aerial Device, commonly referred to as a insulated bucket truck.

AED: Automated External Defibrillator

Arc Flash Suit: A complete arc rated clothing and equipment system that covers the entire body, except for the hands and feet.

ANSI: American National Standard Institute.

ASTM: American Society of Testing Materials.

Energized: Equipment and/or wiring electrically connected to a source of voltage.

Flame Resistant: ASTM listed clothing, designed to reduce shock and burn potential from electric arcing to a survivable injury.

Arc Rating: The value attributed to the materials that describe their performance to exposure to an electric arc discharge. The arc rating is expressed in cal/cm² and is derived from the determined value of the arc thermal performance value (ATPV) or energy of break open threshold (Ebt) (should a material system exhibit a breakdown response below the ATPV value).

MAD: Minimum Approach Distances (**Excerpt** from OSHA Table 1910. 269 (x). Employees that are qualified and properly equipped with personal protective equipment, tools and lifts may work within the MAD.

Approach:	Nominal voltage in kilovolts (KV)	Distance: Phase to ground exposure
	0.05 to 1.0	Avoid contact
	1.1 to 15.0	2'-1" (0.64m)
Reference Table R-6 in [1910.269(l)(10)]		

NEC: National Electrical Code.

NFPA: National Fire Protection Association.

PPE: Personal Protective Equipment.

OSHA: Occupational Safety and Health Administration.

PDA: Power Distribution Assembly, a traffic signal cabinet component.

Qualified Employee: An Employee who has successfully undergone on-the-job training for the purpose of obtaining skills and knowledge necessary to be considered a qualified employee, and who has attended department provided training on electrical safety, and who has demonstrated ability to work safely on energized equipment at his or her level of training.

All employees must be observed performing the work on which they are to be qualified by a Supervisor. The supervisor must certify that the employee is qualified to work on energized equipment. (The Supervisor can assign another qualified employee to work with the employee before the employee is qualified.)

Prohibited Approach Boundary: Minimum approach distance to exposed live parts to prevent flashover or arcing. For traffic signal cabinet and signal head work, the minimum prohibited approach boundary begins with opening of cabinet and/or enclosure.

Limited Approach Boundary: An unqualified person shall maintain a minimum approach distance of 4 feet from all energized equipment for voltages of less than 600 volts, unless accompanied by a qualified person. For voltages above 600 volts, the minimum approach distance for an unqualified person, unless accompanied by a qualified person, shall be those found in the NYS High Voltage and Proximity Act but **at no time be less than 10 feet.**

Restricted Approach Boundary: Closest distance to exposed live parts a qualified person shall approach without proper PPE and tools. For all exposed conductors, the restricted approach boundary is 1 foot. Restricted approach boundary does not apply to closed cabinets.

Arc Flash Protection Boundary: The farthest established boundary from the energy source. If an arc flash occurred, this boundary is where an employee would be exposed to a curable second degree burn (1.2 calories/cm²).

Voltage Rated (VR) Tools: ASTM rated tools for work on energized circuits, and shall be rated for a minimum of 600 volts.

General Requirements

Qualified Traffic Signal employees shall work on energized electrical equipment consistent with their training and within the limitations of their tools and personal protective equipment.

Traffic signal employees shall not perform work on electrical utility lines or perform emergency repairs or any other work that is clearly responsibility of the utility. Employees shall consult with their supervisor or Regional Traffic Signal Engineer-In-Charge (EIC) with any questions.

Unqualified persons, including non-Department employees and members of the general public, shall not be permitted closer than 4 feet of an open "Energized" traffic signal box (limited approach boundary). Employees shall verify that cabinets are not energized by using a non contact voltage detector prior to making physical contact with the enclosure. Traffic Signal employees shall wear all appropriate PPE, including but not limited to, eye protection, gloves and safety footwear prior to work on exposed or live conductors (restricted approach boundary).

Personnel working from non-insulated platform trucks or other vehicles that are not insulated shall not be closer than 10 feet to energized equipment of 600 volts or greater. The distance will be measured from the closest body part of the employee or any part of the non insulated vehicle to the closest energized conductor.

Non-insulated platform trucks or other un-insulated vehicles shall not be used within the Minimum Approach Distances (MAD).

When an energized conductor will be less than 10 feet from the Traffic Signal employee and the voltage is unknown, the Supervisor shall be consulted and contact the Utility as necessary. If the Utility cannot provide the voltage the conductor shall be considered to be 600V or greater. Only ANSI/ASI approved aerial lifts shall be used when working closer than 10 feet to energized equipment of 600V or greater.

Any work performed in close proximity to energized equipment of 600 volts or greater shall be done under adequate lighting conditions, either natural or artificial. A spotter shall observe all overhead operations while personnel is in proximity to energized conductors of 600V or greater. Spotters shall be trained in the operation of the insulated lift device.

Traffic Signal employees shall report any electrical shocks to their immediate supervisor. Supervisors shall determine the likely cause and recommend corrective actions prior to work beginning again. All Traffic Signal Employees shall be certified in CPR/First Aid/AED annually.

A first aid kit shall be provided in all traffic signal crew response vehicles.

Training

Part 1. Electrical Training Qualifying Employees to work on Energized Department Equipment (Signal Heads and Traffic Signal Cabinets, etc.) shall include the following:

All new Traffic Signal employees assigned to work on energized equipment shall be provided Department specific formal training as soon as practical after the time of hire. Un-trained employees shall not work on energized equipment. Training shall include:

- Effects, causes and prevention of electrical shocks and arc burns.
- Selection, inspection, limitations, and wearing of PPE.
- Department work practices for energized equipment.
- Safety requirements contained in this and other relevant Department safety issuances.

Part 2. In addition to Part 1, training that qualifies employees to work within the Minimum Approach Distances (MAD) shall be provided and include the following elements:

- The different types of electrical conductors used by the electrical Utility likely to be encountered by Traffic Signal employees.
- The voltage associated with the different energized conductors.
- Any special precautions that are needed when working with or near an energized conductor.
- The MAD for the respective voltage of conductors.
- The PPE required for work within the MAD.
- The Department policy when the voltage is unknown or unidentified.
- The appropriate aerial lift device and other tools needed for work within the MAD.
- Training to be renewed annually.

Part 3. As part of their training all Traffic Signal employees shall receive the Department's electrical safety handbook.

Retraining

Refresher training shall be provided to all employees, in addition to the Department specific formal training, every three years.

Verification of employee compliance with safety-related work practices

Through regular supervision or through inspections conducted on at least an annual basis, each employee shall be observed to make sure he/she is complying with the safety-related work practices required by this standard. The result shall be recorded in the employee annual performance evaluation.

Training documentation

Training documents shall be maintained for the duration of the employee's employment through SLMS (Statewide Learning Management System). The documentation shall contain the content of the training, each employee's name, and dates of training.

Auditing

The electrical safety policy shall be audited by Employee Safety and Health to verify the principles and procedures of the electrical safety policy are in compliance with the standard. The frequency of the audit shall not exceed 3 years. Also, field work shall be audited to verify the requirements contained in the procedures of the electrical safety policy are being followed. When the auditing determines that the principles and procedures of the electrical safety program are not being followed, the appropriate revisions to the training program or revisions to the procedures shall be made. The audit shall be documented.

Personal Protective Equipment (PPE)

PPE requirements are intended to:

- Ensure compliance with existing Department procedures in Safety Bulletins on Work Clothing Guidelines, High Visibility Apparel & Hard Hat Policy, and Safety Footwear Policy; and comply with NFPA 70E recommendations to protect employees from electrical shocks and electrical arc hazards.

(To meet the above requirements and/or as new products or work procedures warrant, Traffic Signal management may change or substitute PPE.)

Where potential exists for contact with energized components or equipment, employees shall wear, during all work on poles, cabinets, cabling or signal heads, appropriate PPE identified in the following Tables 1 & 2 and found under Procedures, Power Distribution Assembly (PDA) Special Circumstances.

Table 1

Minimum PPE for Work on Fused Energized Equipment

Head	Department issued, high-visibility orange, non-conductive, high impact, ANSI EG rated hard hat.
Eye	ANSI Z87.1 Safety Glasses
Hand	ASTM voltage rated gloves with leather over gloves*
Torso	Garments that meet current Department requirements for high visibility apparel. ASTM Arc Rated Clothing may be required when working on un-fused PDAs.
Foot	ASTM F/1/75/C/75 or M/1/75/C/75 with EH (nonconductive notation).
Tools	Voltage rated tools

Minimum PPE for Work on Un-fused Energized Equipment

Head and Face	Department issued, high-visibility orange, non-conductive, high impact, ANSI EG rated hard hat and arc rated balaclava and face shield.
Eye	ANSI Z87.1 Safety Glasses
Hand	ASTM voltage rated gloves*, heavy duty leather gloves (as needed)
Torso	ASTM arc rated coveralls or arc rated rain jacket and pants.
Foot	ASTM F/1/75/C/75 or M/1/75/C/75 with EH (nonconductive notation) and insulated over boot.
Tools	Voltage rated tools
Hearing protection	Ear canal insert

*All rated gloves will be inspected by a manufacturer-approved laboratory every 6 months or replaced. All new and unused gloves contained in a sealed bag shall be inspected annually.

To avoid damage from sharp edges, during maintenance, component changes and troubleshooting, and when changing the controller and cards, leather gloves shall be worn in addition to VR rated gloves.

Table 2

Additional PPE for Work on Energized Equipment During Foul Weather

Torso and Legs	Rain Suit (Foul Weather Gear) - - - ASTM Arc Rated
Foot	Boots and Over Boots - - - ASTM Arc Rated

Tools and Equipment

ASTM voltage rated tools shall be used for all work on energized equipment. Inspection is required prior to each use. Voltage rated tools have a laminated exterior coating. A contrasting interior color is revealed when scratched or damaged. If this interior coating is exposed, the **voltage rating is void, and the tool shall be removed from service.**

Procedures

Power Distribution Assembly (PDA) or Electrical Service Disconnects Special Circumstances

Existing traffic signal cabinets may not be provided with a disconnect from the utility. Installing or removing a PDA in these cabinets necessitates working on electrical lines with unlimited amperage. Replacing Electrical Service Disconnects represents a similar hazard. This work presents potential for an arc flash exceeding the protection afforded by the PPE identified in Tables 1 & 2. **Therefore, qualified employees replacing PDAs in Traffic Signal Cabinets not provided with utility service disconnects or Electrical Service Disconnects shall require the utility to temporarily disconnect electrical service to safely replace the PDA; OR qualified employees shall wear ASTM arc rated full rain suit or coveralls; balaclava, face shield, safety glasses, hardhat, EH rated overboots, EH rated work boots and hearing protection. (This ensemble must have a minimum ASTM flash arc rating of 8 calories/centimeter squared.) A physical barricade must also be installed to prevent unqualified employees, employees not provided with appropriate personal protective equipment, other workers, and the general public closer than four (4) feet to the traffic signal cabinet when replacing a live PDA or Electrical Service Disconnect.**

Troubleshooting Following a Traffic Accident or Physical Damage to Signal Installation

Approach the general area cautiously and evaluate for overhead or ground hazards before approaching the traffic signal equipment. Minimum PPE (Table 1) and VR tools shall be used when approaching the pole and cabinet. If snow, ice, rain or water has accumulated in the area, ASTM arc rated rubber boots shall be worn.

If the electrical service equipment is damaged, local power company shall be called to disconnect the service feed until DOT's pole, weather head and electrical service equipment have been installed or repaired. A non-contact voltage detector/meter shall be used to determine if surrounding area is energized. The pole and cabinet shall be tested to determine if they are energized. If the service feed is intact and the disconnect is O.K., turn

off the power, open and secure door and begin replacing components that are damaged.

Qualified Traffic Signal employees working between the HVPA distance and the MAD: MAD (Minimum Approach Distance) 600V or Greater.

- The Supervisor or his or her designee shall determine that the work can be performed safely, and is necessary to be performed. An electrical work permit shall be issued in CarteGraph or by written permit (see example).
- When there is a question regarding the voltage of the energized conductor the Supervisor shall verify the voltages with the Utility.
- The Traffic Signal Supervisor shall ensure that employees working up to the MAD are qualified.
- The Traffic Signal Supervisor shall verify that the appropriately rated personal protective equipment, tools and vehicles are used. Any work to be performed within the MAD the Supervisor shall contact the utility company and request that the utility company de-energize or insulate or relocate the hazard for voltages of 600V and above or a Close Proximity to High Voltage Energized Electrical Work Permit shall be issued.
- All questions will be referred to the Regional Traffic Signal EIC.

Engineering Considerations for Traffic Signal Installations

- Each electrical utility service shall have a lockable service entrance disconnect, located for easy and safe access (some services may also require meters).
- Access to the poles, cabinets, cabling and the weather heads shall not create a hazard in reference to overhead high voltage lines, secondary lines, street lamps, and deep ditches. The pole top must be accessible by bucket/tower truck.
- Ground wires from poles to ground rods shall be identified by a drawing located in the cabinet or marked on the outside of the pole to indicate location and direction.
- Main electrical disconnects shall be located on the signal pole or isolated post to reduce potential exposure to traffic and the public.
- Traffic signal cabinets should be located to reduce potential exposure to vehicle traffic, the public and should be placed in a safe location for the Traffic Signal employee to work on the cabinet. Cords on the controller shall be protected from pinching. Cabinets shall contain outside labels to warn of hazardous voltage, and indicate that the unit is to be accessed by qualified personnel only. The inside of the cabinet shall be labeled to warn for potential arc flash and shock hazard.

Equipment Labeling Requirement for Electrical Hazards:

All traffic signal equipment shall be labeled with the following information

- 1) Nominal voltage, which is 120 volts for traffic signal equipment.
- 2) Arc Flash Boundary, which is 9" for traffic signal equipment
- 3) Working distance (10" for fused power)
- 4) Incident energy at AFB 1.2 cal/cm²

- 5) One of the following:
- Available incident energy and the corresponding working distance (1.0 cal/cm² at 10")
 - Minimum **arc rating** of clothing (1.0 cal/cm² for fused cabinet power and 8.0 cal/cm² clothing for unfused - PDA and disconnect switch installation power)
 - Required **level** of PPE (1.0 cal/cm² for fused cabinet power and 8.0 cal/cm² PPE for unfused - PDA and disconnect switch installation power)
 - Highest Hazard/Risk Category (**HRC**) for the equipment (HRC=0 for fused power and HRC=2 for unfused power)

Related References

MAP 7.11-17	Inspection of Aerial Lift Devices
ANSI A92.2	Vehicle-Mounted Elevating & Rotating Aerial Device
ANSI A92.8	Vehicle-Mounted Bridge Inspection

Refer to the following Safety Bulletins for additional information:

Fall Protection
Working in Proximity to Water
Aerial Lift Devices
Rental / Leased and Surplus Equipment
High Visibility Apparel and Hard Hat Policy
Electrical Safety
Lockout/Tagout Procedures
Railroad Safety

Blanket Energized Electrical Work Permit – Fused Power

PART I: TO BE COMPLETED BY REQUESTER:

1. Signals CarteGraph ID: N/A Work Order #: N/A
Location Description: All locations when work is performed on fused power
2. Scope of work to be done: Any and all work performed on fused electrical circuit with voltage measured at 135 VAC or less
3. Justification of why work cannot be deferred until the circuit/equipment is de-energized, relocated or insulated: Work performed on active traffic signals where de-energizing the active power source may result in placing the public at risk or would result in removing a safety device whose purpose is to protect public safety.

X N/A N/A
Requester's Name Date

PART II: TO BE COMPLETED BY THE QUALIFIED PERSON DOING THE WORK:

- 1) Detailed job description procedure to be used in performing the above detailed work: Routine traffic signal maintenance and repair.
- 2) Description of the Safe Work Practices to be employed: Work to be performed using industry standard work practices.
- 3) Results of the Shock Hazard Analysis (NFPA 70E 130.2A): Avoid contact
- 4) Results of the Flash Hazard Analysis (NFPA 70E 130.3): Hazard Risk Category (HRC)
- 5) Determination of the Flash Protection Boundary (NFPA 70E 130.3A): 9 inches
- 6) Necessary personal protective equipment to safely perform the assigned task: Hard hat, safety glasses, EH rated work boots, voltage rated tools, and voltage rated gloves with leather over glove.
- 7) Means employed to restrict the access of unqualified persons from the work area: Limited Approach Boundary is 4.0 ft use cones or barricades
- 8) Was a Job Briefing including discussion of all site-related hazards completed prior to the start of work? ☒ Yes ☐ No
- 9) Can the job be completed safely? ☒ Yes ☐ No (if No, return to requestor)

X N/A N/A
Electrically Qualified Person Date
Performing Work

PART III: APPROVAL TO PERFORM THE WORK WHILE ENERGIZED:

X N/A N/A
Supervisor or Designee Date

PERMIT EXPIRATION DATE:
X None Time: None

Energized Electrical Work Permit –Unfused Power

PART I: TO BE COMPLETED BY REQUESTER:

- 1) Signals CarteGraph ID: _____ - _____ - _____ Work Order #: _____
Location Description: _____
- 2) Scope of work to be done: _____
- 3) Justification of why work cannot be deferred until the circuit/equipment is de-energized, relocated or insulated: _____

X

Requester's Name

Date

PART II: TO BE COMPLETED BY THE QUALIFIED PERSON DOING THE WORK:

- 1) Detailed job description procedure to be used in performing the above detailed work:

- 2) Description of the Safe Work Practices to be employed:

- 3) Results of the Shock Hazard Analysis (NFPA 70E 130.2A): **Avoid contact**
- 4) Results of the Flash Hazard Analysis (NFPA 70E 130.3): **Hazard Risk Category (HRC) = 2**
- 5) Determination of the Flash Protection Boundary (NFPA 70E 130.3A): **32 inches**
- 6) Necessary personal protective equipment to safely perform the assigned task: **Employee shall wear minimum 8 calories/centimeter squared ASTM arc rated coveralls or arc rated rain jacket and pants; arc rated balaclava, face shield, safety glasses, hard hat, hearing protection, voltage rated and leather over gloves, EH rated work boots and insulated over boots, and voltage rated tools.**
- 7) Means employed to restrict the access of unqualified persons from the work area:
Limited Approach Boundary is 4 ft.; use cones or barricades
- 8) Was a Job Briefing including discussion of all site-related hazards completed prior to the start of work?
Yes No
- 9) Can the job be completed safely? Yes No (if No, return to requestor)

X

Electrically Qualified Person
Performing Work

Date

PART III: APPROVAL TO PERFORM THE WORK WHILE ENERGIZED:

X

Supervisor or Designee

Date

PERMIT EXPIRATION DATE:

X

Time:

Close Proximity to High Voltage Energized Electrical Work Permit
For Aerial Cable

PART I: TO BE COMPLETED BY REQUESTER:

- 1) Signals CarteGraph ID: N/A . Work Order #: N/A
Location Description: All locations in close proximity to "AERIAL CABLE"
- 2) Scope of work to be done: Any and all work performed in close proximity to "AERIAL CABLE" as described as a completely insulated and grounded electrical transmission system which is suspended between utility poles.
- 3) Justification of why work cannot be deferred until the circuit/equipment is de-energized, relocated or insulated:
As the aerial cable by design and installation is protected from the danger of electrical shock per NESC 230C.1, it shall be considered to be made safe by the Utility Company.

X

Requester's Name

Date

Part II: TO BE COMPLETED BY THE QUALIFIED PERSON DOING THE WORK:

- 1) Detailed job description of procedures to be followed (Must include Description of Safe Work Practices, Assessed Shock Hazards, Assessed Flash Arch Hazard, Necessary PPE and Equipment and Restricted Access to non-qualified Persons):
Any and all work conducted within close proximity to Aerial Cable shall be performed by a Qualified Employee, working within an insulated aerial lift vehicle. While Aerial Cable is considered safe, employees shall avoid physical contact with the aerial cable by persons, tools, or equipment. Only standard PPE is required when working within close proximity to Aerial Cable (Hard Hat, Eye Protection, EH Rated Safety Shoes and Approved Fall Protection).

Is a Job Briefing including discussion of all site-related hazards to be completed prior to the start of work? Yes X No

- 2) Can the job be completed safely? Yes X No (if no, return to requester)

N/A

Electrically Qualified
Person Performing Work

N/A

Date

PART III: APPROVAL TO PERFORM THE WORK WHILE ENERGIZED:

X

N/A

N/A

Supervisor or Designee

Date

PERMIT EXPIRATION DATE:

X

None

Time:

None

EXCAVATION SAFETY

Department employees shall be protected from hazards associated with trenching and excavation by complying with proper work practices. OSHA Construction Standard regulations 1926.650 - 652 set specific standards for worker protection based on depth of excavation and soil characteristics.

If you plan to dig or do any type of excavation work, New York State law requires you call Dig Safely New York (811) **prior** to doing so. You need to provide two full working days notice prior to starting your work, not counting the day of your call, weekends or holidays. This provides time for the utilities to locate your proposed dig site.

All Department employees shall comply with these regulations. Copies of these regulations are available in Geotechnical Services and Employee Safety and Health.

Definitions

Angle of Repose (or Incline) - Angle from the horizontal surface at which the excavation wall is cut.

Benching - Method of protecting employees from cave-in by excavating the sides of an excavation to form one or more horizontal levels or steps, usually separated by vertical or near-vertical surfaces. Refer to Diagram A.

Cave-In - Separation of a sufficient quantity of soil or rock from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden falling or sliding into the excavation.

Competent Person - Person capable of identifying existing or potential hazards, or work conditions which are unsanitary, with authority to take prompt corrective measures.

Disturbed Soil - Soil that has been previously excavated, moved or deposited, which does not have the stability of undisturbed soil. Most soils in the right-of-way have been disturbed.

Excavation - Man-made cut, cavity, trench or depression in the earth surface formed by the removal of soil and rock.

Protective System - Method of protecting employees from cave-in, from material that could fall or roll from the face or wall into an excavation, or from collapse of adjacent structures. Protective systems include support systems, sloping and benching, shields, and other devices or methods that provide necessary protection.

Sloping - Digging the sides at an incline away from the deepest part of an excavation to prevent cave-in. The angle required depends on factors such as soil type, environmental conditions (wet or dry soil), and equipment, structures, soil or other material near the edge of excavation. Refer to Diagram B.

Soil Type - Soils are characterized by their physical properties and typed A, B or C.

SOIL TYPES

Type	Unconfined Compressive Strength	Soil Description	Fissured Soil	Maximum Wall Angle/Ratio of Horizontal to Vertical
A	1.5 or greater	Silty Clay Loam, Sandy Clay Loam, Clay	No	53 degrees / $\frac{3}{4}$ to 1
B	5 to 1.5	Gravel, Silt, Silty Loam, Sandy Loam, Some Silty Clay Loam and Sandy Clay Loam	Yes	45 degrees / 1 to 1
C	Less than .5	Granular Soils, Gravel, Sand, Loamy Sand, Submerged Rock, Unstable Rock	Yes	34 degrees / $1\frac{1}{2}$ to 1

Support System - Structure, such as underpinning or shoring, which provides support to an adjacent structure, underground installation, or excavation walls.

General Requirements

All employees in an excavation shall be protected from cave-in by an adequate protective system. Exceptions may be made for excavations entirely in stable rock, or less than 5 feet in depth, where examination of ground conditions by a competent person provides no indication of potential cave-in.

Where depth and/or soil characteristics indicate potential for cave-in, employees shall be protected by a support system or by properly designed sloping or benching.

Means of egress from excavations ---- stairway, ladder, ramp or other devices ---- shall be located in trench excavations 4 feet or deeper, and require no more than 25 feet of lateral travel to get out.

Employees shall not be permitted beneath loads being moved or supported by lifting or digging equipment; and shall be required to stand away from any vehicle being loaded or unloaded to avoid spillage or falling material. Hard hats shall be worn.

Air testing shall be conducted in any excavation where oxygen deficiency and/or a flammable gas concentration may exist. **Excavations with atmospheres containing less than 19.5% oxygen or a flammable gas concentration greater than 10% of lower explosive limit shall not be entered.** Air testing may also be required when there is an indication that the soil is contaminated. The presence of a service station, storage tank, land fill, gas line, or sanitary sewer near the excavation site may indicate contaminated soil. Employees shall look for signs

of contamination (odors and/or discoloration of soil), and, if detected, contact the Safety and Health Office for guidance.

Employees shall not work in excavations with an accumulation of water, or accumulating water, unless adequate precautions have been taken, such as special shields, water removal, and/or safety harness and life line.

Stability of adjacent structures must be determined before excavating. Structures weakened or endangered by the excavation shall be supported by appropriate means to protect against movement or collapse.

Employees shall be protected from material and equipment falling into the excavation by placing and keeping such materials or equipment at least 2 feet from the edge of excavation, or by use of retaining devices sufficient to prevent materials or equipment from falling or rolling into the excavation.

Excavations left open overnight shall be inspected before re-entry. A competent person shall look for evidence of cave-in, protective system failure, hazardous atmosphere, and/or water.

Employees working adjacent to an excavation with potential for falling more than 6 feet shall use fall protection.

When mobile equipment is operated adjacent to an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be used such as barricades, hand or mechanical signals, or timbers. Grades should always slope away from the excavation.

Design of Protective Systems

Where employees are protected from cave-in by a support, shield, or other protective system, the design shall meet or exceed all anticipated loads that could be exerted by cave-in. Typical protective systems include wooden shoring, aluminum shoring (hydraulic, mechanical, or pneumatic), and trench boxes.

When one of these systems is used, the depth of excavation shall not extend more than 2 feet below the bottom of the shields. Excavation below the shield can only be done if the shield is designed to resist the forces calculated for the full depth of the trench, and there is no indication of possible soil loss behind or below the bottom of the shield.

Design of Sloping/Benching

Where sloping or benching of excavation walls is used to protect employees from cave-in, the walls shall not be sloped at an angle greater than 34 degrees measured from the horizontal (ratio of one and one-half horizontal to one vertical), unless the soil can be shown to be type A or B.

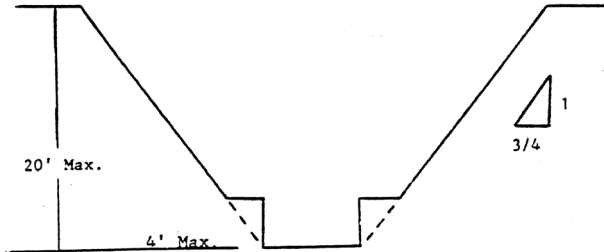
Where testing has shown soil conditions to be type A or B, the angle of repose may be increased. The maximum allowable angle for type A soil is 53 degrees (ratio of 3/4 horizontal to one vertical) and for type B is 45 degrees (ratio of one horizontal to one vertical).

For assistance in designing and implementing excavation safety procedures, contact Geotechnical Services or Employee Safety & Health.

DIAGRAM A

ALL BENCHED EXCAVATIONS 20 FEET OR LESS IN DEPTH SHALL HAVE A MAXIMUM ALLOWABLE SLOPE OF $\frac{3}{4} : 1$ AND MAXIMUM BENCH DIMENSIONS AS FOLLOWS:

SIMPLE BENCHING TYPE A SOIL



MULTIPLE BENCHING TYPE A SOIL

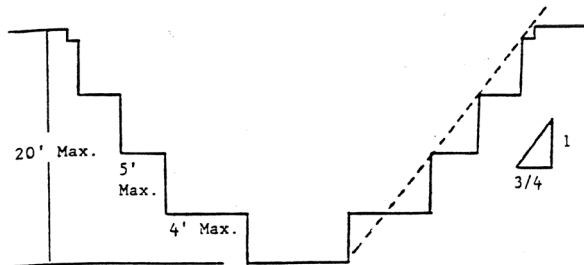
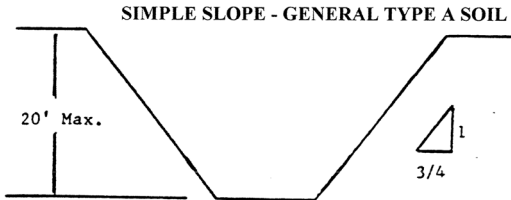
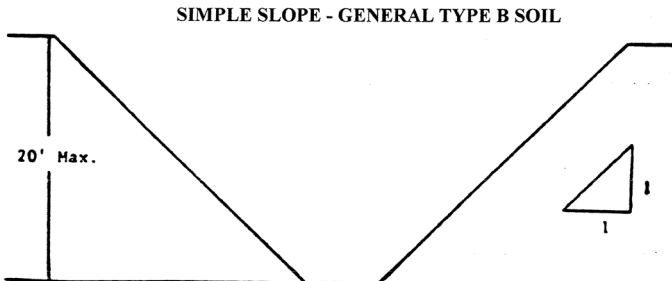


DIAGRAM B



ALL SIMPLE SLOPE EXCAVATION 20 FEET OR LESS SHALL HAVE A MAXIMUM ALLOWABLE SLOPE OF $\frac{3}{4}$: 1. EXCEPTION: SIMPLE SLOPE EXCAVATIONS WHICH ARE OPEN 24 HOURS OR LESS (SHORT TERM) AND ARE 12 FEET OR LESS IN DEPTH SHALL HAVE A MAXIMUM ALLOWABLE SLOPE OF $\frac{1}{2}$: 1.



ALL SIMPLE SLOPE EXCAVATIONS 20 FEET OR LESS IN DEPTH SHALL HAVE A MAXIMUM ALLOWABLE SLOPE OF 1:1

EYE AND FACE PROTECTION

Eye injuries can be virtually eliminated with the use of proper protection. This policy describes various types of eye protection and examples of tasks requiring their use, although the list of tasks is not intended to be all inclusive. Eye protection specifically required for welding, cutting, and brazing work is addressed in the Welding, Cutting, Brazing, and Heating Safety Bulletin.

Policy

The Department shall supply and employees shall wear and maintain appropriate eye protection when performing tasks that present a potential for eye injury. The Department does not provide prescription safety glasses. All employees in the immediate area where a task is being performed who are also at risk for eye injury shall wear appropriate eye protection. Eye and face protective devices shall comply with American National Standards Institute (ANSI) Z87.1-2003.

Types of Protection

Safety Glasses - Designed to protect eyes against impact from small objects in accordance with ANSI Standards. Safety glasses shall have side shields to protect the eyes from material entering from behind the lens. Prescription glasses are not a substitute for safety glasses unless they meet ANSI Standards (normal prescription glasses are rated "impact resistant", which is less stringent than ANSI Standard requirements). Prescription safety glasses shall have identification on the lens or frames to be acceptable as safety eye wear.

Goggles - Eye protection that forms a seal around the entire area of the eyes. Goggles with direct side ventilation holes are for impact protection. Goggles with indirect ventilation (holes are partially covered to restrict liquids from entering) provide chemical splash protection.

Face Shields - Constructed of high impact plastic or metal mesh, and are used to increase the area of protection (entire face) from impact or chemical splash.

Evaluation of Eye Protection

The following tasks are examples of where proper eye protection shall be worn; the list of tasks is not intended to be all inclusive. Where the potential for eye injury exists, eye protection shall be worn.

Safety Glasses

Bench grinders
Various metal and wood shop equipment

Impact Goggles

Clearing brush
Hand held grinders

Plastic Face Shield with Goggles

Pressure washing
Chemical transfers

Chemical Goggles

Battery service
Crack sealing

Working under vehicles
Weed trimming
Pavement milling
Rust removal with grinder or needle gun
Clearing debris with high pressure air hose
All hand held power tools

Plastic Face Shield with Safety Glasses

Jack hammering/chipping
Table saw (kick back protection)
Lathe operations

Face Shield (wire mesh preferred) with Safety Glasses

Chain saw operations
Feeding a chipper

Eye Wash Station Requirements

An important part of eye protection is the availability of emergency eye wash stations. In locations where an eye wash station is required, the eye wash station must be designed for 15 minute continuous operation with tempered water and meet all ANSI requirements. Portable squeeze bottle eye washes shall be available in remote locations where employees are exposed to particles or non-corrosive liquids.

Contact Lenses

Contact lenses do not provide eye protection. Their use without additional eye/face protection where required is prohibited.

FALL PROTECTION

This Safety Bulletin establishes Department policy and procedures for working safely in elevated locations, and is based on Occupational Safety & Health Administration (OSHA) and American National Standards Institute (ANSI) requirements for fall protection, and personal protective equipment (PPE). These procedures shall be carefully reviewed by Program Management in consultation with Employee Safety & Health, as necessary, prior to work beginning, to assure full compliance with this Safety Bulletin.

Definitions

Active (Personal) Fall Arrest System - *Personal fall arrest system* means a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. The use of a body belt for fall arrest is prohibited.

Aerial Lift - A piece of equipment, extendible and/or articulating, designed to position personnel and/or materials in elevated locations.

Competent Person - "Competent person" means a person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as in their application, use with related equipment and has the authority to take prompt corrective measures.

Controlled Access Zone (CAZ) - An area where a recognized hazard exists requiring demarcation by a competent person through use of signs, wires, tapes, ropes, chains, or other devices. All protective elements of the CAZ shall be implemented prior to beginning work.

Floating Work Platform - Platform or barge capable of safely supporting workers, equipment, and materials necessary to perform work.

Full Body Harness - ANSI approved body device designed for fall protection, which by reason of its attachment to a lanyard and safety line or structure will limit a fall to 6' or less. (Dynamic harness shall not be used.)

Lanyard - ANSI approved line designed to support one person, with one end fastened to a full body harness, and the other end secured to a safety line or structural member. Lanyards shall not exceed 6' in length, and preferably include a retractable or deceleration device to attenuate fall impact.

Passive Fall Protection System - System used to prevent a fall from a working level that does not require immediate action by an employee, such as guardrail or safety nets.

Positioning Device - Harness system designed to allow an employee to be supported on an elevated vertical surface, with both hands free, and limit a free fall to 2' or less.

Qualified Person - "Qualified person" means one with a recognized degree or professional certificate and extensive knowledge and experience in the subject field who is capable of design, analysis, evaluation and specifications in the subject work, project, or product.

Restraint Device - Harness system designed to keep an employee within a passive fall protection system.

Safety Equipment

All safety equipment and PPE shall meet applicable OSHA, ASTM and/or ANSI standards, including, harnesses, lanyards, safety lines, nets, ladders and scaffolds.

OSHA refers to harness devices as "personal fall arrest systems" in all standards related to fall protection. This term is defined as a "system used to stop an employee in a fall from a working level. It consists of a harness, anchorage point, connectors, and lanyard. Because aerial lifts have passive fall protection (bucket or rail system), the intent of the harness is to keep each occupant in the device upon impact, not to attenuate a fall from it. (Refer to the Safety Bulletin on Aerial Lift Devices for additional information).

Safety equipment (including PPE) shall only be used for employee protection, and shall be inspected prior to and periodically during each use. Any active (personal) fall arrest equipment actually subjected to in-service loading (a fall while working) shall be removed from service and not reused. Safety equipment showing signs of mildew, broken fibers, deterioration, excessive wear, or damage which could materially affect its strength, shall be removed from service and not reused. Harnesses shall be removed from service 5 years from manufacture date or as specified by manufacturer.

Nets, ropes, harnesses, and lanyards should not become wet. If they do, they must be thoroughly dried before storing. Storage shall be in a dry location away from caustics and corrosives, or other sources of damage or deterioration. Equipment (other than PPE) subject to impact loading (i.e. a fall into a net) shall be removed from service until determined by a competent person to be undamaged and suitable for reuse.

Procedures

Employees working 6', Operations is 4' (General Industry) or more above a lower level shall be protected by a passive fall protection system (OSHA specified railing or net), OR if unprotected by passive fall protection systems, where the danger exists for a fall of 6' or greater, shall use an active (personal) fall arrest system meeting OSHA/ANSI standards.

Supervisors / managers shall determine whether walking / working surfaces are structurally adequate.

Employees shall be protected from falling more than 6' through holes by covers, railings, or fall arrest systems.

Employees on the edge of excavations deeper than 6' shall be protected from falls by railings, fences or barricades.

Employees less than 6' above dangerous equipment shall be protected from falls into or onto the equipment by railings or equipment guards.

Where employees are exposed to falling objects, the following precautions shall be in place:

- toe boards, screen or debris nets
- barricading (CAZ)
- removing objects from the edge(s) of the higher level
- canopy structure designed to provide adequate overhead protection

Roof Work

Refer to OSHA Standard [1926.501\(b\)\(10\)](#) for low slope roofing work, and [1926.501\(b\)\(11\)](#) for steep roofs.

Scaffolds

Scaffolds shall be erected, moved, dismantled or altered under the supervision of a competent person. Such work shall be performed by experienced and trained employees.

Scaffolds shall be designed by a qualified person, and shall be constructed, occupied and loaded in accordance with that design (see the following diagram PROPER CONSTRUCTION OF TUBULAR SCAFFOLD). Scaffolds shall be capable of supporting their own weight and 4 times the maximum intended load (6 times the intended load for suspension scaffolds).

Scaffolds shall be inspected by a competent person daily before use. Adequate sills for scaffold posts and base plates shall be used. Footings shall be sound, rigid and level. Unstable objects such as boxes or concrete blocks shall not be used as footings. Adjusting screws (not blocking) shall be used to adjust to uneven grades.

Scaffolds shall be plumbed and leveled as they are built to ensure braces fit without forcing. Braces shall be fastened securely.

All brackets shall be seated properly --- side brackets parallel to the frame, and end brackets at 90 degrees to the frame.

Free-standing scaffold shall be anchored to the structure at a height of 26' and every 26' thereafter. Anchorage shall be provided at 30' intervals horizontally.

All appropriate precautions in the Safety Bulletin on Electrical Safety, shall be observed when working near energized electrical equipment.

Safe, convenient access, as prescribed by the scaffold manufacturer, qualified or competent person, shall be provided to the platform level by ladder, ramp, or stairway, and properly secured to the scaffold. Ladders, step stools or makeshift devices shall not be used on top of scaffolds to increase height.

Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for employees to be on the scaffold, and employees are protected by a personal fall arrest system or wind screens. Wind screens shall not be used unless the scaffold is secured against anticipated wind loads. Manufacturer specifications may provide wind speed guidelines.

Employees working on and under scaffolds shall wear hard hats. Work done above employees working on a scaffold requires planking or other suitable protection positioned not more than 9' above the work platform.

The competent person shall consult with the manufacturer's recommendations and determine whether fall protection can be worn by employees during erection and disassembly of scaffolds.

Scaffold Work Surfaces (Planking)

Scaffold work surfaces can be constructed using individual wood planks, fabricated planks, fabricated decks, or fabricated platforms.

Single length planks and abutted staging requires cleating. Working platforms shall be solidly planked, using only scaffold grade lumber or approved platforms.

Spacing between planks is prohibited. Planks on continuous horizontal staging shall be overlapped at least 12" and be secured.

Guardrails and Toe Boards

Guardrails and toe boards shall be installed on all open sides and ends of platforms more than 10' above a lower level. Scaffolds 4' to 10' in height, having a horizontal dimension in either direction of less than 45", shall have standard guardrails installed on all open sides and ends of the platform. Rails constructed of wood shall be a minimum of 2" x 4" (nominal), 42" (plus/minus 3") high, with a midrail. Supports shall be at intervals not to exceed 8'. Toe boards shall be a minimum of 3½" high. Where scaffolds are over walks, highways or work areas, spaces between toe board and top rail shall be screened. Over-the-rail and suspended scaffolds shall conform to these requirements. All guardrails and toe boards shall be capable of withstanding a force prescribed by OSHA standards for fall protection.

Picks (Catenary Scaffolds)

Staging supported directly atop wire rope shall have hook-shaped stops on each end of staging members to prevent slipping off the wire rope.

Platforms shall not extend more than 18" beyond wire rope.

Come-alongs with a maximum capacity of 2000 pounds shall be used for tightening. Wire rope shall not be overtightened or overstressed.

Vertical pickups shall be used at least every 50' to reduce sag in wire rope.

Wire rope shall meet OSHA standards and shall be capable of supporting at least six times the intended load. Wire rope shall be continuous without splices between anchors.

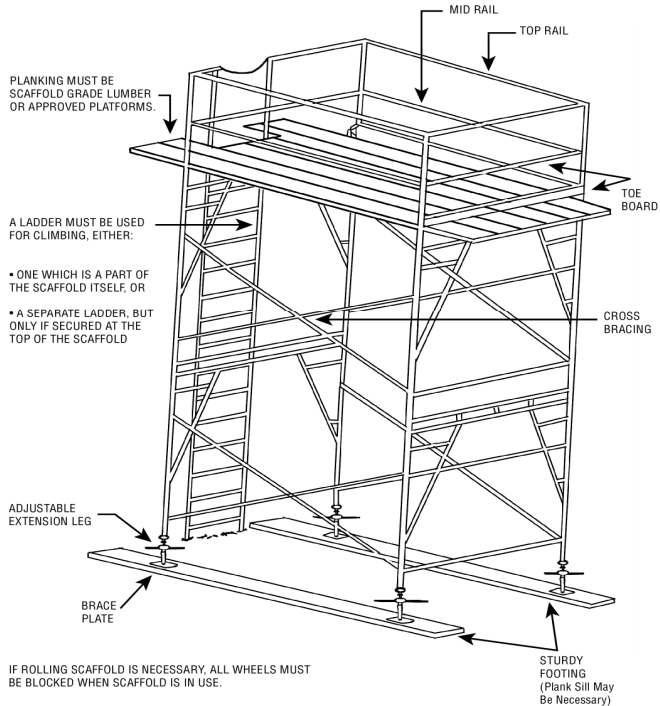
Platforms shall be designed for a minimum 500 pound working load.

Self locking turn buckles on each support cable are required. Each support cable shall be secured with a minimum of three "U" bolts or universal "fist clamps".

Platforms shall be a minimum of 20" wide, maximum 36" wide. Manufacturer rated load for platforms shall not be exceeded.

When working at an elevation of 6' or more above any lower level, active, personal fall protection independent of the pick shall be used. Picks shall be designed by qualified persons and erection overseen by competent persons.

PROPER CONSTRUCTION OF TUBULAR SCAFFOLD



Scaffolds On Barges / Work Platforms

Scaffold systems used on barges / floating platforms shall be securely anchored.

Work platform structures shall be designed by a qualified person to eliminate risk of capsizing.

For additional requirements see the Safety Bulletins on Aerial Lift Devices; Working in Proximity to Water; and Rental / Leased and Surplus Equipment.

Ladders

Ladders shall meet ANSI standards for expected load capacity.

Ladders shall be maintained in good condition. Joints between steps and side rails shall be tight, with hardware and fittings securely attached. Movable parts shall operate freely without excessive play. Rungs shall be free of grease and oil.

Ladders shall be inspected frequently, and if necessary, repaired, or removed from service. Ladders removed from service shall be destroyed and discarded. Older ladders shall be inspected for loose joints, rungs or cracks. Ladders shall not be painted.

Ladders stored in a horizontal position or carried on vehicles shall be supported adequately to avoid sag or permanent set.

If both hands are occupied while on a ladder, a full body harness with positioning device shall be used. Tools and accessories shall be carried in tool pouches.

Ladders shall not be used in a horizontal position for platforms or scaffolds, or as guys, braces or skids, or used for other than their intended purposes.

Load capacity shall be verified before a ladder is used.

Ladders shall not be used by more than one person at a time, unless rated for that purpose by the manufacturer.

Ladders shall not be placed on an unstable base to obtain additional height, nor spliced to increase length.

Ladders used to gain access to a higher working surface shall be secured at the top, and extend at least 3' beyond the top support, but not to exceed 4'. Ladders shall not be moved, shifted or extended while occupied.

Extension ladders, ropes and pulleys shall meet OSHA and/or ANSI specifications.

On two-section ladders, the minimum overlap shall be:

Length of Ladder (ft)	Minimum Overlap (ft)
Up to 36	3
36-48	4
48-60	5

Distance from base of ladder to bottom of structure against which the ladder rests shall equal one-quarter the working height of the ladder.

Metal ladders shall be signed "CAUTION - DO NOT USE NEAR ELECTRICAL EQUIPMENT". Rungs and steps shall be corrugated, knurled, dimpled, or coated with a skid resistant material to minimize slipping.

Where ladders used are in an area where contact with energized electrical equipment could occur, ladders shall have non-conductive side rails. Conformance with the Safety Bulletin on Electrical Safety, shall be required.

Leading Edge Work

Leading edge work includes initial erection and/or working at the extremities of a structure with unprotected sides or edges - - - for example installation of roofing, flooring, or decking. This section is applicable while performing leading edge work 6' or higher above a lower level where it is not feasible or creates a greater hazard to use conventional fall protection systems.

When conventional fall protection systems are not practical or feasible, a Fall Protection Plan meeting appropriate OSHA regulations shall be prepared by a qualified person, developed specifically for the site where the work is being performed. The plan shall designate a competent person to monitor the safety of on-site employees, who shall:

- Be capable to recognize fall hazards.
- Warn employees of a fall hazard or if they are acting in an unsafe manner.
- Be close enough to communicate orally with the employee(s).
- Not have other responsibilities that distract from the monitoring function.

Warning signs, designated areas, CAZ's or similar systems are prescribed by OSHA in some situations to provide protection by limiting the number of workers exposed and instituting safe work methods and procedures. Employees, other than those covered by the Fall Protection Plan, shall not be allowed in the CAZ. Each employee working in a CAZ shall comply promptly with fall hazard warnings by the competent person.

Training

OSHA requires that employees exposed to a fall hazard shall receive training on fall protection requirements and trainers and trainees shall sign training records; and that employees shall be trained when there are changes in fall arrest equipment, the workplace, or when employee knowledge and understanding appear inadequate.

Related References

OFAS Guidance on the use of Rental/Leased/Surplus Equipment

Refer to the following Safety Bulletins for additional information:

Working in Proximity to Water

Aerial Lift Devices

High Visibility Apparel and Hard Hat Policy

Electrical Safety

FORKLIFTS

This procedure establishes minimum requirements for forklifts in accordance with the Occupational Safety and Health Administration (OSHA) 29CFR1910.178 Powered Industrial Trucks and the American National Standards Institute (ANSI) B56.1-1969 standards.

Forklifts include:

- High lift trucks, counterbalanced trucks, cantilever trucks, rider trucks;
- High lift platform trucks;
- Low lift trucks, low lift platform trucks;
- Motorized hand trucks, pallet trucks;
- Narrow aisle trucks, straddle trucks;
- Reach rider trucks;
- Single side loader trucks;
- High lift order picker rider trucks;
- Motorized hand/rider trucks; and
- Counterbalanced front/side loader lift trucks.

This procedure applies to earth moving or over the road hauling equipment that has been equipped with forks, and forklifts that have been modified for use as aerial man lifts. **All modifications must have manufacturers' prior written approval.**

Aerial lifts must comply with 1910.178(m)(12) of the OSHA standard.

Responsibilities

Safe operation of industrial equipment is a shared responsibility.

Management will ensure:

- No reckless operation, stunt driving, horseplay, or passengers.
- A clear view of travel path.
- When ascending or descending grades in excess of 10% load is upgrade. Load will be tilted only far enough to clear grade.
- Elevators are approached slowly and entered squarely. Inside elevator controls are neutralized, brakes set and power shut off. Motorized hand trucks must enter elevator load end forward.
- All traffic regulations are observed. Forklifts will slow down on wet and slippery floors and while turning. Unless maneuvering at very slow speed, steering wheel is turned at moderate rate. Travel is at speed permitting safe stopping. Horn is sounded at cross aisles and where vision is obstructed and through door thresholds.
- Dock plates are secured before driven on. Rated dock plate load should never be exceeded.

- Only stable loads are handled. Loads are within the rated capacity of the forklift. Load is tilted forward only when picking up and when load is placed on rack.
- Forklift is inspected daily and any defect reported.

Training Requirements

Management must ensure employees are competent to operate a forklift. Competence is determined by successful completion of training and evaluation program. Training and evaluation will be conducted by person(s) knowledgeable and experienced in forklift operation. The Worker Series Evaluation Guide for Skills Demonstration meets the OSHA Training Requirements and provides additional details.

Amount and type of training must be based upon employee prior knowledge, skill, performances, as well as, type of forklift and hazards. Training will include at least the following elements:

- Operating instructions, warnings, and precautions;
- Differences between forklift and automobile;
- Controls and instrumentation;
- Engine and motor operations;
- Steering and maneuvering;
- Visibility (including restrictions due to loading);
- Fork and attachment adaption, operation and use limitations;
- Vehicle capacity and stability;
- Vehicle inspection and maintenance required of the employee;
- Refueling and/or charging of batteries;
- Surface conditions;
- Load manipulation, stacking and unstacking;
- Pedestrian traffic, and narrow aisles;
- Ramps and slope surfaces, hazardous locations; and
- Closed environments where insufficient ventilation or poor vehicle maintenance could cause the buildup of carbon monoxide or diesel exhaust.
- Training and certification;
- Forklifts bear a label or other identification indicating they meet ANSI B56.1-1993 requirements (or equivalent);
- Forklifts are not used for handling of fuels such as gasoline, diesel, and liquefied petroleum gas.
- Electric forklifts are charged in an area provided with protection for charging apparatus, adequate ventilation, and facilities for flushing and washing spilled electrolyte. Smoking, open flames and spark producing equipment are prohibited in charging area.
- Defective forklifts are removed from service. Repairs are made by authorized personnel. Forklifts are inspected before returning to service.

Employees will ensure:

When unattended, load engaging means (forks) will be fully lowered, controls neutralized, power off, and brakes set. Wheels will be blocked if forklift is on incline.

Refresher training and evaluation is required when:

Employee has been observed operating the vehicle in an unsafe manner;
Employee has been involved in an accident with forklift;
Employee receives an evaluation that indicates they are not operating forklift safely;
Employee is assigned to drive a different type of forklift or conditions in workplace change; and
at least once every three years.

Management will certify operator has been trained and evaluated. The certification will include date of training, evaluation, and name of employee and evaluator.

HAND AND PORTABLE POWERED TOOLS

Because hand and portable powered tools and equipment can cause serious injuries if not properly used and maintained, OSHA standards exist to ensure worker safety in this area. As with all applicable OSHA standards, the Department is required to assure compliance. This section addresses hand tools; hand powered tools such as saws, portable abrasive wheels.

Regulations

Hand and portable powered tools are addressed in OSHA 1910, Subpart P (General Industry) and 1926, Subpart I (Construction Industry).

Since a single tool or piece of equipment may be covered in more than one regulation, the following is organized by tool type or class to avoid redundancy and confusion.

Tools

The Department shall not issue or permit the use of unsafe tools. Unsafe tools shall be removed from service and shall be tagged or secured until repaired or disposed of. Wrenches, including pipe, open-end, box, adjustable, and socket wrenches, shall not be used when the jaws are sprung or worn to the point where slippage occurs. Impact tools, such as drift pins, wedges, and chisels, shall be free of mushroomed heads. Wooden handles shall be free of splinters or cracks and kept tight.

General Practices

All electrical equipment used in wet areas shall be provided with ground fault circuit interrupter (GFCI).

All electrical equipment that could inadvertently start if the power was interrupted shall be provided with an electrical disconnect switch.

All hand held powered circular saws having a blade diameter greater than 2 inches, shall be equipped with a constant pressure switch or control that shuts off power when pressure is released.

All hand held powered drills; tappers; fastener drivers; horizontal, vertical and angle grinders with wheels greater than 2 inches in diameter; disc sanders with discs greater than 2 inches in diameter; belt sanders; reciprocating saws; saber, scroll, and jig saws with blade shanks greater than nominal one-fourth inch; and similar power tools shall be equipped with a constant pressure switch or control, and may have a lock-on control so that turn-off can be accomplished by a single motion of the same finger or fingers used to turn it on.

Portable belt sanding machines shall have guards for each nip point where the sanding belt runs onto the pulley to effectively prevent hands or fingers from coming into contact with nip points. The unused run (that portion not in contact with a surface) of the sanding belt shall be guarded to prevent accidental contact.

Tools shall not be hoisted or lowered by their power cords. Defective saw blades shall be removed from service.

Portable electric powered tools shall be double insulated or properly grounded, and shall not be used when the plug's ground pin is damaged or missing.

Portable Abrasive Wheels

Right angle head or vertical portable grinders shall have a guard that covers at least 180 degrees of the wheel, located between the wheel and operator.

Other portable grinders shall have a guard that covers at least 180 degrees, and the top half of the wheel shall be enclosed at all times.

Before installation all abrasive wheels shall be inspected and sound or ring tested for damage.

Grinding wheels shall properly fit the bushing, spindle, and flange of the power tool. The hole in the grinding wheel shall be suitably oversized to assure safe clearance under operating heat and pressure. (Refer to various program safety manuals for more detailed information regarding abrasive wheel safety).

Circular Saws

Saws having a blade diameter greater than 2 inches shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for level cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to cover the blade.

Woodworking Equipment

Table saws shall have guards to protect the operator from accidental contact with the saw blade or from being struck by splinters or broken teeth.

Hand fed circular ripsaws shall have a non-kickback device.

Woodworking equipment shall have a positive means of rendering it inoperative during repairs and adjustments (Refer to Safety Bulletin on Lockout/Tagout).

Radial arm saws shall have a hood that completely covers the upper portion of the blade. The lower portion shall be guarded to the full diameter of the blade by a device that automatically adjusts to stock thickness. Radial arm saws used for ripping shall have a non-kickback device. Adjustable stops shall be provided to prevent the saw from traveling beyond the distance needed to perform the cut.

Radial arm saws shall have the front slightly higher than the back, so the cutting head will return gently to the starting position when released.

Band saws shall keep the opening for the working part of the blade as small as practical for the material being cut.

Pneumatic Powered Tools

A tool retainer shall be installed and used on equipment that may eject the tool. Air lines shall be designed for the pressure and service intended.

Compressed air shall not be used for the cleaning of debris off a person.

Maximum operating air pressure of a tool shall not be exceeded.

Air Receivers

This section applies to compressors used to power hand tools, not for compressors used on motor vehicles and heavy equipment as part of their operation (air brakes, for ex.).

A drain pipe and valve shall be installed at the lowest point of every air receiver to remove accumulations of oil and water. An automatic trap may also be installed in addition to the drain

valve. Accumulated water and oil shall be frequently drained.

Air receivers shall have a pressure gauge which is readily visible.

Air receivers shall have one or more spring-loaded safety valves with a total relieving capacity sufficient to prevent the receiver from exceeding the maximum allowable working pressure by more than 10 percent.

Air receivers shall not be located underground or placed in an inaccessible location.

Nailers and Staplers

Pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 p.s.i. at the tool, shall have a safety device on the muzzle to prevent ejecting fasteners when the muzzle is not in contact with the work.

The muzzle of a pneumatic driver shall not be pointed at a person.

Before each use, pneumatic nailers or staplers shall be inspected for worn or broken parts and to assure the muzzle safety device is functioning properly.

Related References

Listed below are the applicable standards:

1910.169 & 1926.306 Air receivers

1910.213 Woodworking machinery requirements

1910.219 & 1926.307 Mechanical power transmission apparatus

1910.242 Hand and portable powered tools and equipment, general

1910.243 Guarding of portable powered tools

1910.244 Other portable tools and equipment

1910.300 General equipment

1926.301 Hand tools

1926.302 Power-operated hand tools

1926.303 Abrasive wheels and tools

1926.304 Woodworking tools

HANDLING ANIMAL CARCASSES / RABIES

Employees removing animal carcasses from the highway right-of-way (ROW) must be aware of the need to protect themselves, co-workers and others against potential exposure to, and inadvertent spread of infectious agents. Careless handling of animal carcasses can create potentially harmful exposure to serious diseases such as rabies and Lyme disease, and infections from salmonella, e-coli and other pathogens. Improper disposal of carcasses and failure to properly disinfect tools, vehicles, and equipment may also infect co-workers, as well as potentially spread disease to the general public and wildlife population. By following established work practices, wearing appropriate personal protective equipment, practicing good personal hygiene, and exercising good judgment, employees can safely handle animal carcasses.

Background

The Department removes approximately 25,000 dead deer and countless other small animals in the ROW annually. It's often Residency practice to limit removal to larger animals, where public safety is a concern. In many cases, a residency may refer callers reporting small animal carcasses to the local animal control officer, who is better equipped and trained to handle smaller animals more likely to be rabid. Carcasses that must be removed shall be handled in a manner that protects workers and the public and assures proper disposal. With increasing land development and more stringent environmental regulations, disposal in many wooded areas is often no longer feasible/ legal.

Rabies is a virus that is found in the body fluid of an infected warm-blooded animal. The rabies virus can survive for long periods of time in the carcass of a dead animal. For this reason, consider all animals as infected and use proper procedures to avoid becoming infected.

If you think that you have been exposed to infectious material from an animal, **DO NOT** dispose of the carcass.

Notify your regional safety representative, then call the County Health Department or NYS Department of Health and seek medical attention. See below for contact information for county health departments:

<http://www.health.ny.gov/diseases/communicable/zoonoses/rabies/contact.htm>

Safe Work Practices

Employees should receive training in the proper handling and disposal of carcasses, and be guided by the following information and precautions.

Handling Animal Carcasses

- Confirm the animal is dead by prodding with a long-handled tool. Startling an injured, apparently lifeless animal, can increase potential for contamination or personal injury.
- Animals injured or dying, or exhibiting abnormal behavior, should be reported to police.

- Numerous dead or diseased animals (or birds) in one location should be reported to supervision and environmental staff, and may warrant contacting other agencies (NYSDEC, NYS or County Health Department).
- When proper disposal cannot be achieved immediately, animal carcasses should be removed from the pavement or shoulder and left in a location in the ROW that does not create public exposure.
- When animal carcasses are transported for disposal, care shall be taken to contain body fluids during transport as follows:
 - Small carcasses should be picked up by inverting heavy doubled plastic bags over a leg or the tail, and pulling the bags (with bag between carcass and gloved hand) over the carcass as it is lifted. A shovel or other tool may be used to lift and push the carcass into the bags. Small animals intended to be composted shall be removed from plastic bags, and the bags disposed of properly.
 - Deer and other large carcasses should be placed on plastic sheets in the truck bed for transport to the disposal site (vs. bagging) or in leak-proof containers, or trucks with bed liners, to contain fluids. Wood chips may be used to help absorb body fluids.
 - Avoid throwing animals into the truck bed to minimize splash.
 - If animal body fluids contact your skin, wash the area with soap and water immediately.
- All tools used for handling dead animals shall be dedicated to this purpose and clearly marked, or shall be disinfected prior to other use. Avoid puncturing the carcass with the sharp edges of shovels and other tools used to remove and transfer dead animals.
- Contaminated disposable coveralls and plastic bags or sheets shall be properly discarded in tightly sealed double plastic bags, and placed in a proper solid-waste receptacle/location.
- Reasonable effort shall be made to disinfect the vehicle and tools after transport. Washing the vehicle bed and tools with a 10% household bleach solution is recommended. Vehicles should dry thoroughly before other use.
- Low trailers or vehicles with power tailgates, lifting devices, ramps, or other devices to minimize lifting-related injuries should be used.
- If there are any questions, or need for additional information, the Regional Safety Representative should be contacted.

Related References

Transportation Maintenance Environmental Handbook:

<http://axim22.nysdot.private:7779/pls/portal/url/ITEM/FF426130A4790092E033AA03204A0092>

HEARING CONSERVATION

Continual unprotected exposure to noise louder than 85 decibels (dB) on the A scale (dBA) for 8 hours may result in hearing impairment or loss. Including employees exposed to loud noise at work in a hearing conservation program will prevent hearing impairment or loss, or further deterioration.

Noise exposure is addressed separately in OSHA General & Construction Industry Standards. Requirements under the General Industry Standard (29 CFR 1910.95) are more stringent and offer greater protection. Based on Department operations, the majority, if not all, employees exposed to high noise levels fall under General Industry.

Noise standards are based on a time weighted average (TWA) calculated as the average sound over an eight hour period. OSHA uses the A weighted sound scale for measuring occupational noise exposure, which weighs noise in the high frequency range and is most damaging to the human ear. Measurement of noise exposure is expressed as dBA or decibels on the A weighted scale.

Policy

This section outlines OSHA requirements; criteria for participation; and Department intention and efforts to become fully compliant.

Employees exposed to noise in excess of 85dBA over 8 hours shall be included in a Hearing Conservation Program (HCP). Determination to include employees is based upon representative noise monitoring and reasonably anticipated job duties. Visitors and employees occasionally exposed to noise for limited durations are not required to be included in a hearing conservation program, but should wear hearing protection and exercise reasonable judgment.

All NYSDOT employees identified at risk for hearing loss shall be included in a hearing conservation program. Program managers should consult Employee Safety & Health regarding determination for their respective program. Any employee who feels that he or she is exposed to any undesirable level of noise may request, and shall be provided, reasonable hearing protection.

Employees with an occupational hearing loss shall wear hearing protection for any task causing noise greater than 85 dBA TWA. Though generally the OSHA action level (85 dBA) only requires the employer to supply hearing protection, it does not mandate its use. Where hearing loss has been identified, hearing protection is mandatory at the 85 dBA level of exposure. Rationale for the more stringent requirement is that those with noise-induced hearing loss are more susceptible to continued hearing deterioration.

Regulations

Employees exposed to noise in excess of the following levels/durations shall be included in a hearing conservation program and hearing protection shall be mandatory. For employees exposed to noise in excess of the values shown in the chart below, the Department shall reduce their exposure by engineering controls, when feasible; administrative controls (reducing exposure by modifying work procedures); and/or personal protective equipment (ear muffs and ear plugs). Employees still overexposed after engineering and administrative controls have been implemented shall wear hearing protection, and be included in a hearing conservation program.

Hours Per Day	Exposure Limit Decibels (dBA)
8	85
4	90
2	95
1	100
1/2	105

Hearing Conservation Program (HCP)

Hearing Conservation Programs shall contain the following components:

- **Hearing Protection** - Hearing protection shall be made available to employees with exposure greater than 85 dBA (TWA), but less than 90. Employees exposed to noise levels greater than 90 dBA (TWA) shall be supplied with hearing protection and shall wear it. Both ear muffs and plugs shall be provided. Within this range, the decision to wear hearing protection lies with the employee, except when a noise induced hearing loss exists.
- **Training** - All employees in the HCP shall be trained annually on the following:
 - Effects of noise on hearing
 - Purpose of wearing hearing protection
 - Selection and proper use of hearing protection
 - Avoiding overexposure to noise away from work
 - Value of audiometric testing
- **Audiometric Testing** - Employees exposed to an 8 hour time-weighted average of 85 decibels or greater shall be offered baseline and annual audiometric examinations. Employees who refuse shall be asked to sign a declination. Results of subsequent annual exams shall be compared to baseline data to determine if the audiogram is valid and if there is a change in the employee's hearing (Standard Threshold Shift or STS). Examinations shall be performed by an audiologist, otolaryngologist, qualified physician, or

technician supervised by one of the first three. Employee exposure to noise shall be minimized for fourteen hours prior to examination. Hearing protection can be used to minimize exposure.

Engineering Controls

Noise may be reduced by introducing changes in equipment design and/or application. This is the most desirable approach to controlling excessive noise. Engineering controls are most successful where loud equipment is in one location. Isolating the process (with partitions, for e.g.); equipment modification (reducing vibration and eliminating metal to metal impact); and equipment replacement are typical practices. Identifying another means of accomplishing the work is another option.

Administrative Controls

Noise may be reduced by changing work procedures in some occupational situations. Discontinuing loud operations in highly populated locations; limiting duration of exposure; and varying task assignments are typical practices. Limiting the number of employees who perform a task and rotating assignments are others. These actions reduce the number of employees required to be in a hearing conservation program.

Selection of Hearing Protection

A successful HCP requires selection of proper hearing protection for each employee. No one style or manufacturer line is acceptable for all employees and all tasks. Management, in consultation with Employee Safety & Health, shall evaluate tasks for:

- Need to communicate among employees
- Level of protection required
- Maintaining sanitary conditions (inserts)
- Compatibility of ear muffs with other personal protective equipment

When the appropriate type of hearing protection has been identified, the Department shall allow employees to reasonably select from different styles. Employees shall be instructed in proper wearing of selected protectors.

Ear muffs and ear plugs are available in different sizes. Ear muffs shall have adjustable head bands, hold the ear pieces tightly to the sides of the head, and make a tight seal. Most ear plugs are designed to fit the “average” male ear canal, and thus are too large for some men and most women. Improperly sized plugs will cause discomfort due to constant pressure against the ear canal. Smaller ear plugs should be available.

Audiometric Testing

Employees in a HCP shall receive an annual audiometric (hearing) test to evaluate effectiveness of the program. An audiometric test shall be performed for all employees newly assigned to tasks which expose them to noise levels greater than 85 dBA TWA. The test should be performed within the first 30 days of such assignment. Employees who transfer from another program in which they were participating in a hearing conservation program need not be retested.

Audiometric testing indicates ability to hear a series of frequencies or tones. By convention, zero (0) decibels is used as the level which an average person with good hearing will first hear each tone. If a person needs the loudness increased, it indicates a hearing loss. Generally, equal loss of hearing at each tone is associated with disease or physical injury. Loss of hearing in the high pitch tones (frequencies) is associated with exposure to noise.

Employees shall be notified if a comparison of the annual audiometric examination to the baseline audiogram indicates an STS. If the STS is determined by a physician to be work related, the employee shall be fitted or refitted with adequate hearing protectors, trained in their use and care, and required to use them. In these cases, the injury reporting procedure **shall** be followed. Employees shall be referred for further testing if a professional determines that test results are questionable, or if employees have a medical condition caused or aggravated by wearing hearing protectors. If the suspected medical problem is not related to wearing protectors, the employee shall be informed of the further need to see a physician.

Record Keeping

Noise exposure measurement records shall be kept for two years. Records of audiometric exam results shall be maintained for the duration of the affected employee's employment, and shall include employee name and title, exam date, examiner's name, date of acoustic or exhaustive calibration, measurements of the background sound pressure levels in exam room, and the employee's most recent noise exposure measurement. All records shall be made available to employees upon request.

HIGH-VISIBILITY APPAREL & HARD HAT POLICY

This section outlines NYSDOT policy for high-visibility apparel and hard hats: locations and conditions which require their use; and provisions regarding availability and compliance. This policy applies to every Department employee, supervisor, and manager; and Department consultants, others involved with Department projects and operations, and visitors. This policy does not enumerate specific procedures to ensure contractor compliance (provided in the Standard Specifications and Consultant Agreements), nor relax more stringent Regional/Program requirements. High-visibility apparel and hard hats shall be provided to all Department employees who require them, and shall be maintained in good condition - - clean, whole and not faded. Program management is responsible for assuring funding, availability, and compliance.

Policy

All DOT employees within the highway right-of-way shall wear high-visibility apparel meeting American National Standards Institute 107 - Class II and/or Class III standards for conspicuity **AND meets** NYSDOT approved garments. High-visibility apparel shall not be purchased without approval by Main Office or Regional Employee Safety & Health.

Managers and supervisors shall decide if high visibility apparel is faded or soiled beyond reasonable usefulness in terms of conspicuity, and conservatively interpret Department standards for Class II or Class III high-visibility apparel effectiveness. When there is any doubt whether apparel offers DOT employees the high-visibility characteristics intended by the Department, it shall be replaced with new apparel which unquestionably meets Department intent to maintain very high levels of conspicuity.

High-visibility vests, 3-season jackets, and rain gear shall be provided by the Department, and purchased from a preferred source or contract vendor. Truck and Rail Inspectors shall be provided with Class II and/or Class III compliant coveralls that meet the NYSDOT design standard.

3 Season Jackets/Rain Gear/Vests

All garments shall be closed in front at all times. Properly sized and fitted garments shall be worn while operating equipment such as chain saws, brush chippers, or while climbing trees. Employees working near moving vehicles or equipment in any location shall wear Class II/III approved apparel. All non-DOT employees having business in the highway right-of-way shall wear some type of Class II/III high-visibility apparel.

Working in or on aerial lift equipment in the highway right-of-way shall require approved Class II/III high-visibility apparel. The need for high-visibility apparel inside the enclosed cab of vehicles/equipment shall be left to supervisory discretion. Employees/operators, who exit from such equipment within the highway right-of-way, shall wear approved Class II/III high-visibility apparel. Operators of tractor mowers without enclosed cabs shall wear approved Class II/III

high-visibility apparel while mowing. Employees working on railroad property shall conform to owner/operator policies regarding high-visibility apparel.

Hard Hats

Hard hats shall be worn in accordance with this policy. Only Department-approved hard hats shall be worn by DOT employees. Employees shall periodically inspect hard hats for cracks and other signs of damage or deterioration. Supervisors shall ensure defective or faded hard hats are taken out of service and replaced. Hard hats shall be orange; have reflective material on four sides; shall not be painted or materially altered in any way; and shall be worn as intended by the manufacturer. Decals and stickers, other than those issued by the vendor or expressly approved by Employee Safety & Health are prohibited.

Employees, while exposed to overhead hazards, flying objects, electrical contact, and other potential head injury hazards, shall wear a Department-approved hard hat at all times. All persons in the highway right-of-way and all other designated areas shall wear a hard hat. Hard hats shall be worn by employees for certain tasks performed at facility "yards", including, for example, staging areas, work areas proximate to Residency, Sub Residency, Bridge Crew, and Traffic Signal Crew facilities. The following tasks, for example, require use of hard hats in a "yard" setting - - - hanging/unhanging, installing/removing hoppers; work on hoppers hanging on racks; atop mounted hopper grates; crane and aerial lift work; forklift work; placing/removing materials from overhead racks; work on or under scaffolds or portable steps; loading/unloading guiderail, signs, pipe, drums, etc.; storing/removing stored plows and wings; roof or other exterior structural building repair; trimming/cutting trees; operating or working near mowers. This list is not inclusive, but intended to describe the various types of work activity requiring hard hats. Common sense and good judgment shall always dictate whether head protection is required. Where not required by policy, and there is any doubt, hard hats shall be worn.

Hard hats shall be worn in or on aerial lift equipment, or on suspended or free-standing scaffolds. Hard hats are not required inside an automobile, truck cab, or enclosed operator compartment. If a supervisor believes an enclosure will not provide adequate head protection, a hard hat shall be required. Operators shall wear a hard hat in tractor mowers without enclosed cabs.

Employees working on railroad property shall conform to owner/operator head protection policies. For example, when railroads require white hard hats on their right-of-way, the Department shall purchase and employees shall wear white hard hats. In cases of shared right-of-way by the Department and railroad (at-grade crossings, bridges over rail), the railroad shall not impose upon the Department unreasonable regulations beyond recognized industry standards (i.e., OSHA). Department safety requirements shall prevail.

Policy Exceptions

In isolated situations of limited duration, where wearing high-visibility apparel and/or hard hat poses a hazard or extreme hardship, a supervisor may deviate from this procedure as necessary, but only for such isolated situations of limited duration. For example, a mechanic performing roadside repairs might be unable to work under a vehicle or over the engine compartment with a hard hat; a truck inspector might have difficulty inspecting beneath a vehicle with a hard hat; or a surveyor taking sightings through a transit may have to temporarily reverse the hard hat. Solid rationale must dictate exceptions. Reasonableness is also important. For example, walking to a destination on a sidewalk in a municipality may not require a hard hat or high-visibility apparel. However, work activity in that same setting would necessitate both.

HISTOPLASMOSIS

This policy is intended to alert employees of this potential health hazard and establish common sense precautions to minimize exposure.

Employees engaged in a variety of tasks are often required to work in areas where birds or bats have roosted, usually for long periods. These areas are often found in bridge structures, cold storage facilities, tree cavities or crevices, stumps, or in the nearby soil. Substantial accumulation of droppings can occur in these locations. Areas with small amounts of dried droppings pose minimal hazard.

Histoplasma fungus grows in locations contaminated with substantial amounts of bird or bat droppings. Infectious material enters the body usually by inhalation into the lungs, but in some cases by ingestion through the mouth into the gastrointestinal tract. Symptoms may include [fever](#), [chills](#), [cough](#) or chest pain.

Procedures

Prior to work in any area where pigeons or bats may roost, a thorough inspection should be made to determine if, and to what extent there is a build-up of droppings. Inspection itself requires minimum precautions such as the use of personal protective equipment, which may include gloves, rubber boots, rain suit components, goggles and a disposable N95 respirator. Questions regarding proper equipment for this activity should be directed to the Regional Safety and Health Representative.

If substantial material (2 inches or more in depth) is found in the immediate work area, work practices that minimize the exposure to airborne particles shall be used. These practices include cleaning, material handling in such a way to minimize dust, and use of personal protection equipment. Employees engaged in cleaning and removing droppings activity shall wear all of the personal protective equipment specified above. A high powered water hose is an effective means to remove material. If the material is to be scraped away, it must be kept wet during the entire process. Application of a cleaning agent (bleach, for example), may be used to disinfect the surfaces. Compressed air shall not be used to remove droppings because it increases the potential for inhalation and ingestion of airborne particles and the area of potential exposure.

Employees engaged in cleaning or removal activities shall practice good personal hygiene. Special care must be taken to wash hands thoroughly before eating or smoking.

Related References

<http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002073/>

HORSEPLAY

The Department as an employer has an obligation to provide a hazard-free work environment, regardless of the source of the hazard. This includes protecting employees from adverse consequences arising out of practical jokes or other activities commonly referred to as "horseplay".

Horseplay is generally defined as behavior which is essentially without malice, but can be characterized as childish, infantile, and foolish in nature.

Supervisors and managers are aware of the general prohibition against horseplay in the work environment and generally know the reasons why. HORSEPLAY CAN AND DOES RESULT IN INJURY, AND IN SOME CASES DEATH. It is for this reason that the Department expressly prohibits horseplay of any kind on the job.

Horseplay will not be tolerated on the job, on state property and/or in the course of performing work for the Department. Immediate Supervisors and Managers have direct responsibility for controlling such behavior. Those found to have contributed to any adverse consequences (in particular an injury or worse) will be subject to disciplinary action.

INFECTIOUS MATERIALS / BLOODBORNE PATHOGENS

This section outlines the Department's policy to minimize exposure to infectious material. Employees engaged in work activities such as litter pick-up, removal of trash from work locations or rest areas, cleaning lavatory facilities, shall avoid potential exposure.

Infectious material may include bloodborne pathogens. Bloodborne pathogens are microorganisms present in blood which can cause disease in other humans. These pathogens include Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV). Employees are not expected to have an exposure to these contaminants.

Employees will not be assigned tasks that expose them to bloodborne pathogens without first including employees in an OSHA compliant bloodborne pathogen exposure control program. Such a program includes offering Hepatitis B vaccinations, training, personal protective equipment, and post exposure follow-up.

Employees shall not handle needles, medical waste, red bags, packages marked infectious, drug vials and drug paraphernalia. Additionally, while not directly related to this employees shall not open unlabeled boxes, drums, and containers. Employees shall not touch weapons or any evidence that might be related to a crime. Employees shall report all such material to their Supervisors. As appropriate, Supervisors shall contact the Police, the Resident Engineer, the Maintenance Environmental Coordinator, and the Regional Safety and Health Representatives.

Employees shall refrain from contact with homeless people or other people living in the Right of Way under bridges or on Department or State property. Employee shall not move material(s) or belongings which appear to be the property of the homeless without specific direction from their Supervisors. Supervisors shall consult with their Regional Director of Operation.

Work Practices

Employees shall assume that all debris may be infectious and shall avoid contact. Safe work practices shall be used to eliminate exposure to infectious materials, including:

- Using shovels, forks or tongs to remove/handle roadside debris to avoid direct contact.
- Carrying trash bags away from the body to avoid skin punctures.
- Using tools, **not hands**, to compact trash in barrels or other receptacles.
- Practice good hygiene. Wash hands frequently using antibacterial hand sanitizer after contact with potentially infectious material.
- Decontaminating/disinfecting tools and equipment after contact with potentially infectious material with a 9 to 1 water/bleach solution.
- Cover a cut, scratch, or any other break in the skin such as rashes and chapped hands.
- Do not rest open bags, packages, containers or containers on your leg.

Personal Protective Equipment

The Department shall provide employees engaged in litter pick-up and performance of other janitorial/cleaning work, as necessary, with:

- Leather gloves
- Face shield (If needed)
- Eye protection
- Disposable coveralls

Training

Regional managers and supervisors shall train employees performing litter pick-up and janitorial/cleaning work on this policy, and other procedures that minimize the potential for exposure to infectious material. The training shall be documented per Tailgate Safety Training Safety Bulletin.

The Safety and Health Unit will develop and deliver Bloodborne Pathogens Awareness Training that emphasizes work practices, PPE and exposure protocol. This training will be provided to DOT employees who perform tasks described in this bulletin, as well as employees who may have other occupational exposures.

Follow-Up

In event an employee suspect's exposure to a needle stick or infectious material, contact the Agency Safety & Health Representative immediately. All immunizations and post-exposure evaluations shall be performed and appropriate medical records maintained, consistent with that required by the OSHA Bloodborne Pathogen Standard.

JACK STANDS AND LIFTS

This section pertains to all lever and ratchet, screw, and hydraulic jacks.

Manufacturer's rated capacities shall be legibly marked on all jacks and shall not be exceeded.

Jacks shall be placed on stable ground, flooring, or blocking.

Where the possibility exists for the jack to slip out from under the load, blocking shall be used between the top of the jack and the load.

After the load is lifted to the desired height, the load shall be cribbed, blocked, or otherwise secured before work is performed under the load.

Jacks with stop indicators shall not be allowed to exceed the limit of travel. Stop indicators shall be kept clean and readable.

Hydraulic jacks subjected to freezing temperature shall be augmented with antifreeze.

Jacks shall be properly lubricated at regular intervals, maintained in proper working condition, and thoroughly inspected according to the following:

- Jacks used in one location - every 6 months
- Jacks used in the field - before and after use
- Jacks subjected to abnormal load or shock - before and after use

Jacks which are broken or defective (cannot be used to the rated limit), or which fail shall be removed from service and tagged until repairs are made.

LOCKOUT / TAGOUT

"Lockout" and "Tagout" are terms which describe procedures for preventing an injury or accident during the maintenance, repair or servicing of electrical and mechanical equipment and systems, by isolating workers from energy sources.

Lockout is the preferred method of isolating machines or equipment from energy sources to ensure the safety of equipment operators, maintenance personnel and others while work is in progress.

This procedure establishes minimum requirements for a lockout or tagout program in accordance with OSHA standards. It shall be used to ensure that machines and equipment are locked or tagged out of service before employees perform any work where the unexpected energizing, start-up or release of stored energy could occur.

Definitions

Lockout: Placement of a mechanical device (lock, for example) on a piece of equipment or switch to prevent that equipment from being operated or energized until the device is removed.

Tagout: Placement of a warning tag or sign on equipment or machinery to indicate that equipment can not be operated until the tag is removed.

Abandoned Lock(s): A lock or locks left on equipment/machinery by an individual who is unavailable when the equipment is ready to be placed back into service.

Affected Employee: Employee who normally operates machinery or equipment on which service or maintenance is performed under lockout or tagout conditions, or required to work in an area where such service or maintenance is performed.

Authorized Employee: Employee trained and designated to use lockout/tagout procedures. "Authorized" and "affected" employee may be the same when the operator's duties include maintaining or servicing machinery or equipment which must be locked out or tagged out.

Capable of Being Locked Out: An energy-isolating device designed with an attachment hasp or integral part to which a lock can be affixed; or equipment or machinery with a built-in locking mechanism.

De-Energized: Disconnected from all energy sources and without stored energy.

Energized: Connected to an energy source or containing residual or stored energy.

Energy-Isolating Device: Mechanical device that physically prevents transmission or release of energy, including but not limited to the following:

- Manually-operated electrical circuit breaker disconnect switch
- Manually-operated switch by which circuit conductors can be disconnected
- Blocks to immobilize springs and hydraulic rams
- Pipe Blanks

Energy Source: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other energy.

Individual Lock: A lock or locks assigned to an authorized employee responsible for maintenance, servicing, etc., which is identified with that employee only.

Location Lock(s): A lock or locks kept at a facility to maintain protection when individual locks must be removed (during a shift change, for example).

Normal Production Operation: Use of a machine or equipment to perform its intended function.

Service and/or Maintenance: Workplace activities such as constructing, installing, modifying and maintaining or servicing machines or equipment including lubrication, cleaning, unjamming, minor adjustments or tool changes. During these activities, employees may be exposed to unexpected energizing or start-up of equipment, or the release of stored-up hazardous energy.

Setting Up: Work to prepare machinery or equipment to perform normal production operations.

Responsibilities

Management shall establish, maintain, and approve specific lockout/tagout control procedures for all machinery and equipment.

Only employees authorized by management shall lockout or tagout machinery or equipment.

Authorized employees shall notify affected employees whenever a lockout or tagout is to occur, and when equipment is placed back in service.

Minimum Requirements

Lockout is the required method of isolating machines/equipment from the energy source when the energy source is capable of being locked out. No attempt shall be made to operate equipment which has been locked out or tagged out of service.

Whenever major replacement, repair, renovation or modification of machines/equipment occurs, energy-isolating devices shall be incorporated into the design.

Lockout/tagout devices shall be singularly identified; shall be the only devices used for

controlling energy; and shall not be used for other purposes.

Lockout devices shall be capable of withstanding the environment to which they are exposed. Tagout devices shall withstand exposure to weather and environment to avoid deterioration of the tag or the message from becoming illegible.

Lockout/tagout devices shall indicate the identity of the employee(s) applying the device(s).

Procedures

All affected employees shall be notified when a lockout device or tag will be used and why. The authorized employee shall know the type and magnitude of energy involved and understand the hazards.

Machinery or equipment to be locked out or tagged out shall be shut down by the normal procedure (stop buttons, on-off switch).

The authorized employee shall apply a tag on the operator controls to indicate a lockout and/or tagout is in effect. Where there are no operator controls, a tag shall be applied at the energy-isolating device.

The switch, valve, or other energy-isolating device(s) shall be operated to isolate the equipment from its energy source(s). Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding, etc.

The energy-isolating devices with assigned individual lock(s) and/or location locks shall then be applied to prevent inadvertent operation.

Employees who return to work on a locked out or tagged out piece of machinery or equipment, after being out of the area for a time, shall first verify that their individual locks or tags are still in place.

If equipment is unable to be locked out, a tag shall be placed on the energy-isolating device.

After all personnel are safely positioned or removed, the authorized employee shall determine whether the energy sources are disconnected by operating the push button or other normal operating controls to ensure the equipment will not operate.

After the test is conducted, the operating control(s) shall be returned to the "neutral" or "off" position (de-energized state) after the test.

If an employee is exposed to contact with parts of electric equipment or circuits which have been de-energized, a qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed to verify that they have been de-energized and to determine if any energized condition still exists as a result of

inadvertently-induced voltage. If the circuit to be tested is over 600 volts nominal, the test equipment shall be checked for proper operation immediately before and after the test. A lock and tag are required to be placed on all electrical isolation devices.

Restoring Machines or Equipment to Normal Production Operations

After servicing or maintenance is complete and equipment is ready for normal production operations, the area around machines or equipment shall be checked to ensure that everyone is safely positioned or removed.

After all tools have been removed from the machine or equipment, guards have been reinstalled, and employees are in the clear, remove all lockout devices or tags on the operator controls.

If more than one employee is required to work on locked out or tagged out equipment, each shall place his/her personal lockout or tagout device on the energy-isolating device(s). When an energy-isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used. A single lock may be used to lockout the machine or equipment with the key out of the lock and in a location where no one else will have access.

Location Locks

A group of locks shall be designated as "location locks" to be kept at a facility to avoid an unlocked piece of equipment at a shift change, between functions, or prior to work being completed. Location locks are designed to maintain continuous protections when, for example, one employee is required to finish the work another employee began; when DOT and contractors are working together; or when major work will not be completed during the shift in which it was started.

Location locks shall not take the place of individual employee locks.

Abandoned Locks

- Any job where a lockout device or tag was left in place by an employee, and the equipment/machinery must be returned to service without that same employee involvement or authorization is referred to as an "abandoned lock". For example, a mechanic who was working on a locked out piece of equipment at the end of the day calls in sick, and the equipment he or she was working on needs to be placed back in service the next day.
- When the employee who first locked out the equipment returns to work, he or she shall verify that their individual lock is still in place or has been removed.
- Extra keys for each individual lock shall be maintained in a secure location with access limited to management. Before the lock is removed, a thorough inspection of the equipment shall be conducted.
- Abandoned locks shall be removed only by management using the extra key after the equipment or machinery has been thoroughly inspected by an authorized employee.

- Reasonable effort shall be made and documented to notify employee(s) that their locks have been removed. An Emergency Lockout Removal Incident Report shall be prepared.

Contractor Personnel

Construction Contracts: Under the standard construction contract provisions, contractors are responsible for ensuring that their employees and subcontractors comply with all OSHA regulations, including lockout/tagout procedures. These procedures are to be addressed in the project health and safety plan. Compliance with these procedures is subject to inspection by Department inspection staff.

Other Contracts: The Department often engages contractors to perform other than highway/bridge construction activity. For example, contract maintenance work, or work on building equipment systems, etc. It is the responsibility of the contractor to have energy control systems in place; and ensure that their employees comply with lockout/tagout procedures.

Annual Inspection

Annual inspections shall be conducted by authorized employees to review lockout/tagout procedures. Each location shall be responsible for conducting and documenting inspections. Documentation shall include employee names, dates of inspection and hazardous energy control procedures used.

Training

Training shall be given to all authorized employees prior to their initial involvement with energy control procedures, including recognition of hazardous energy sources; type and magnitude of energy, and control methods. Authorized employees shall be provided with a copy of this Safety Bulletin.

Training shall be provided to all affected employees covering the purpose and use of energy control procedures.

Retraining shall be provided whenever there is a change in job assignment or procedures, if annual inspection identifies a deficiency.

Training shall be documented on a NYSDOT OSHA Training Record Form SAF-14.

LYME AND RELATED DISEASES

This section is designed to increase awareness about the existence of Lyme disease throughout New York State; and to inform employees about the potential for contracting disease caused by exposure to ticks, and the precautions to avoid contact.

TICKS are small parasitic arachnids (related to spiders) that live on blood. Three common species that cause disease are Deer Tick, Dog Tick and Lone-Star Tick. Common reference to Deer and Dog ticks is often misleading since ticks are also found on many warm-blooded animals such as mice, birds, domestic animals and humans, and can be found in tall grass when they are not feeding. Four diseases associated with ticks are: Lyme disease, Ehrlichiosis, Rocky Mountain Spotted Fever and Babesiosis. All of these diseases are caused by microorganisms that live in the infected tick. When the tick bites an individual the microorganism is passed onto the host.

LYME DISEASE - a bacterial infection transmitted only by the Deer Tick. Ticks infected with Lyme disease can be found throughout New York State. Sixty percent of people infected by Lyme disease will develop a circular, red, warm, rash with a "bulls-eye" appearance.



Deer Tick



Actual Size

The official common name for a tick often suggests that it parasitizes a specific animal host ('deer tick', 'dog tick', 'cattle tick', etc). However, with rare exceptions, most tick species willingly suck blood from almost any animal they encounter.

Primary Stage Symptoms - fever, nausea, testicular and lymph node enlargement, malaise, muscle and joint aches and pains, and rash. These symptoms appear 3-30 days after infection.

Secondary Stage Symptoms - meningitis, encephalitis, and carditis, which if left untreated can result in neurological symptoms, heart problems and arthritis.

Prevention

- Carefully inspect the body after being in areas of potential exposure. Prompt removal of ticks is important. Deer ticks must remain attached at least 36 hours to transmit Lyme disease. Wear clothing with tight cuffs at the wrists and ankles.

- Use insect repellent -- There are many different products on the market, with different ingredients, concentrations and effectiveness. The most effective contain DEET, permethrin (only to be applied on clothing), picaridin or oil of lemon eucalyptus. If you decide to use one, be sure to follow label directions and apply repellent carefully. The user should read the manufacture's label carefully - see **Additional Information**.
- Tuck pants into socks, use two-sided tape around ankles to immobilize crawling ticks.

Treatment - Lyme disease, Ehrlichiosis, and RMSF are treated with antibiotics. Babesiosis is treated with drugs used for Malaria. In all cases, a physician is necessary for proper treatment.

Removal

If a tick starts to bite, prompt removal is essential. Removal before the tick is completely embedded in the skin will greatly reduce chance of infection.

A safe method of removal is with tweezers or specifically designed extractors. Grab the tick by the **head and mouth** as close to the skin as possible and pull straight out. Avoid squeezing the **body** of the tick during extraction. Clean area with soap and water to avoid secondary infection. Inspect the bite area after removal to assure that all of the tick has been removed. Never attempt to remove a tick with heat, Vaseline, or chemicals, since such techniques may cause the tick to regurgitate infectious material into the bite.

Vaccination

There is currently no approved vaccination for Lyme disease.

Other Tick Related Diseases

ROCKY MOUNTAIN SPOTTED FEVER (RMSF) - found in the Long Island area, mostly in Dog Ticks, but frequently found in other tick species. Symptoms appear within two weeks of the bite of an infected tick. RMSF is characterized by a sudden onset of moderate to high fever (which can last for two weeks), severe headache, fatigue, deep muscle pain, chills, and rash. The rash begins on arms or legs, may include the palms of the hands or the soles of the feet, and can spread rapidly to the rest of the body.

BABESIOSIS - a rare tick-borne disease that can be found in the Long Island area and is carried by the Deer Tick. Babesiosis is of most concern to the elderly and individuals with weak immune systems. It takes from 1 to 12 months for symptoms to appear. Infections can occur without producing symptoms. Common symptoms include fever, fatigue and anemia, lasting from several days to several months.

EHRlichiosis - found in the Deer Tick, Dog Tick and the Lone-Star Tick. Cases have been diagnosed in Westchester County and the lower Hudson Valley and Long Island. Symptoms appear 1 to 3 weeks after infection. Common symptoms are fever, muscle aches, weakness and headache. People may also experience confusion, nausea, vomiting, and joint pain.

Rash is very uncommon.

Additional Information

Repellents can be effective at reducing bites from ticks and insects that can transmit disease. Their use is not without risk of health effects, especially if repellents are applied in large amounts or improperly. More information is available at the NYS Department of Health at Environmental Health INFOLINE 1-800-458-1158 or online at <http://www.health.ny.gov/publications/2749/>.

PARKING / STARTING VEHICLES AND EQUIPMENT

This policy is intended to eliminate hazard potential and establish safety procedures for parking and starting Department owned, rented or leased vehicles and equipment. It is not intended to replace or supersede pre and post-trip operator requirements or completion of related reports.

Proper Parking Procedures

Operators are responsible for properly parking vehicles and equipment and shall be parked in accordance with the following:

Equipment/Vehicles having standard transmissions:

When the vehicle is parked inside a facility, the vehicle shall be placed in neutral and the keys shall be left in the ignition. If the vehicle has a known or suspected brake problem or other serious mechanical deficiency, the keys shall be removed and the wheels chocked. An EM-3 shall be completed and a mechanic shall inspect and release the vehicle before it is operated.

For all other parking conditions, the vehicle shall be placed in reverse gear or lowest forward gear with the parking brake applied, and the keys removed. The same procedures described above shall be followed when serious mechanical deficiency is suspected.

Vehicles with auto-shift transmissions:

In all situations the operator shall select neutral on the shift control. (Note: If gear display does not show a solid "N", neutral has not been obtained) set the parking brakes, turn off the ignition key and allow the vehicle to shut down. When in a facility the keys shall be left in the ignition, in all other parking conditions the keys shall be removed. If the vehicle has a known or suspected brake problem, or other serious mechanical deficiency, the keys shall be removed and the wheels chocked. An EM-3 shall be completed and a mechanic shall inspect and release the vehicle before it is operated.

Unattended/Idling Vehicles:

When leaving the vehicle unattended, operators shall not bypass the diesel engine auto shut down by not setting the parking brake, leaving the transmission in neutral and/or dropping the plow. This practice, whether in a plow truck or any other vehicle, must not be allowed because it is a serious violation of safety policy and violates both the V&T Law and DEC Law.

Parking on a Grade

When the vehicle is parked facing down a grade, the front wheels shall be turned into the curb, or where there is no curb, turned away from the roadway. When the vehicle is facing up a

grade, or anytime the grade is excessive, it may be appropriate for larger, heavier vehicles to chock the vehicle.

Proper Starting Procedures

Equipment/Vehicles having standard transmissions:

The engine of any motorized vehicle or piece of equipment shall not be started unless the operator is fully and properly in the driver/operator position (intended by the manufacturer), and ready to drive and/or operate the vehicle/equipment, seatbelts properly worn, and in all other respects prepared to drive/operate. The only exception to the seat belt requirement is for mechanics performing diagnostic work. The vehicle must be in neutral, the clutch depressed, and the parking brake engaged before starting a vehicle/piece of equipment.

In all cases Operators are required to follow the CDL 7 Step Air Brake Check procedure in any equipment or vehicle with air brakes prior to engaging the transmission.

Vehicles with auto-shift transmissions:

For all vehicles with auto-shift and fully automatic transmissions the manufacturer's parking/starting procedures define the steps that need to be taken when starting/parking or when leaving the cab with the engine running. The manufacturer's directions regarding these procedures must be followed in order to insure your safety and the safety of those around you.

PERMIT REQUIRED CONFINED SPACES

Working in a Permit Required Confined Space (PRCS) involves significant risks. Fatalities and injuries have resulted from causes including:

- Atmospheric (flammable gas, vapor, mist, combustible dust, oxygen deficiency)
- Mechanical (impeller, rotating shaft, moving linkage)
- Engulfment (capture by liquid or flowable solid)
- Electrical
- Inadequate Training

Policy

The N.Y.S. Department of Transportation shall conform to appropriate PRCS requirements in the Occupational Safety and Health Administration (OSHA) Standard 29CFR1910.146. Nothing in this Safety Bulletin is intended to add additional requirements, change definitions, or abridge OSHA requirements.

This Safety Bulletin does not satisfy OSHA requirements for a written plan. Model written programs are available from the Regional Safety and Health Representative.

Confined spaces have the following properties:

- Large enough for a person to bodily enter and perform work;
- Limited or restricted means of entry or exit;
- Not designed for continuous occupancy.

These three factors alone can exist in a benign environment, such as a home attic or crawl space. However, when the following factors are present, a potentially hazardous condition exists:

- Hazardous atmosphere;
- Engulfment;
- Internal configuration that could trap or asphyxiate by progressively smaller areas;
- Serious electrical or mechanical hazard.

Oil water separators, catch basins, pits, manholes, silos, tanks, vessels, drop inlets, and bridge compartments are, unless otherwise classified, to be regarded as a PRCS. Culverts depending upon diameter, length, internal configuration and ventilation may also be a PRCS (see Safety Bulletin on Culvert/Subsurface Entry). Entry into a PRCS occurs when any part of the entrant's body breaks the plane of the opening into the space.

Department management shall identify all PRCSs at their facility. Management must mark all spaces, using stenciling, signs or a list in a conspicuous location. All facilities where Department employees enter a PRCS shall maintain a written PRCS plan. Management shall notify employees or contractors of the existence of PRCS and requirements for working in them. Only employees or contractors who are trained and provided with appropriate personal protection and atmospheric monitoring equipment may enter a PRCS.

Facilities with an oil water separator must (as a minimum) mark or sign the opening as a PRCS and include it on a written list with any other facility PRCSs. In addition, where management has decided to have Department employees enter the oil water separator; entries must meet all requirements of this policy. Contractors working on oil water separators must be provided with at least this Safety Bulletin and any other appropriate procedure or policy.

By using tools like a shepherd's crook, it may be possible to work in a PRCS without entering it. In such instances, only this policy's provisions for marking the opening, listing the PRCS, and basic instruction not to enter would be applicable.

The Regional Safety and Health Representative shall: assist in identification of PRCSs; conduct appropriate training; review written PRCSs; recommend personal protective equipment and rescue procedures; and provide other assistance as necessary.

Procedure

Requirements necessary to be in place before entry by Department employees:

- **Written PRCS Plan** addresses prevention of unauthorized entry, type of hazard, work practices, monitoring, provision for attendant, duties of employees, rescue and emergency medical services, multi-employer operations, and provisions for review procedures. Unless specifically prohibited, hazardous operations in PRCS's (such as hot work and painting) require special procedures and permits.
- **Written Entry Permit** (attached) or permit meeting requirements of 29CFR1910.146(f).
- **Entry Supervisor** verifies requirements of permit and ensures means of rescue are readily available. Cancels or terminates entry as required and removes unauthorized personnel. Periodically monitors operation for conformance. When appropriate, reclassifies PRCS to non permit-required confined space in accordance with 29CFR1910.146(c)(7).
- **Attendant(s)** maintains accurate account of authorized entrants and remains at entry site until relieved by another attendant or until work is complete. Monitors conditions around space and maintains communication with entrant(s). Performs non-entry rescue or summons rescue and medical services, as needed. One person may assume the duties of Entry Supervisor and Attendant.
- **Entrant(s)** shall properly use required equipment, maintain communication with attendant, and evacuate if emergency occurs.
- **Monitoring.** PRCSs shall be monitored for oxygen, toxic and flammable gases **before and during** entry. Prior to entry, spaces shall be tested using a four gas meter for oxygen content, hydrogen sulfide, flammable gases, and carbon monoxide. Testing shall be conducted from top down as space allows at various levels. Testing equipment shall be calibrated as required by manufacturer and must be in proper working condition. Test results shall be recorded on the permit. When oxygen levels are less than 19.5% or greater than 23.5%; or when combustible gases are greater than 10% of lower explosion limit; or toxic gases greater than permissible exposure limits, entry shall not be made or the space shall be vacated. Mechanical ventilation (portable blower with flexible duct work) is not required by the Standard, but is strongly recommended to purge the PRCS and provide

continuous ventilation.

- **Personal Protective Equipment.** Hard hats and atmospheric monitoring device(s) are mandatory when working in PRCSS. Hearing protection, eye protection, boots for wetness, safety footwear, flashlights, gloves, protective garments, low voltage and/or explosion-proof lighting and ladders should be available. Communication equipment is mandatory when normal voice contact is not possible. Respiratory protection is generally not required to enter PRCSS. However, in certain instances, e.g. dust and odor control, respiratory protection may be appropriate. Escape respirators are appropriate when exit time is lengthy.
- **Mechanical Retrieval Equipment.** Required for entry into vertical PRCSS greater than 5 feet deep. At a minimum, chest or full-body harness (attached at center of back or above head to a mechanical lifting device) shall be provided. Rescue by non-entry mechanical retrieval is preferred. If a PRCSS has obstructions or turns such that mechanical retrieval equipment is not practical or creates more of a hazard, on-site rescue shall be immediately available prior to entry. On-site rescue shall be made by rescue personnel, properly trained and equipped, who have practiced rescue in this confined space.
- **Medical Services** shall be provided by local emergency responders. Means to summon medical services shall be immediately available and detailed on the permit.

Training

PRCS training shall be conducted before entry; when there is a change in operations; or when deviation in policy occurs. Training shall be documented and address:

- Types of hazards.
- Components of written plan and permit.
- Entrant, Attendant, Entry Supervisor and Rescuer responsibilities.
- Atmospheric testing equipment: use, calibration, and maintenance.
- Acceptable entry conditions: oxygen, combustibles, carbon monoxide, and hydrogen sulfide.
- Methods to control or eliminate hazards.
- Procedures for hazard detection.
- Health symptoms: narcosis, hypoxia, and other health effects.
- Personal protective and other equipment: full body harness, life line, tripod, respiratory protection, chemical protective clothing, eye/face/hearing protection, communication equipment and ladders.
- Rescue plan and practice.

Permit No.:**Location and Hazard:**

Purpose of Entry:		
Entry Permit Valid for:	From date:	To date:
Name and Model of Meter: (Meter must be calibrated and calibration records available)		
Atmospheric Testing: Enter meter	Prior to entry	During entry
Readings		
Oxygen		
Entry not permitted oxygen less than 19.5% or greater than 23.5%.		
Explosive (Gas/Vapor)		
Entry not permitted if LEL greater than 10%.		
Carbon Monoxide		
Entry not permitted if carbon monoxide greater than 35 ppm.		
Hydrogen Sulfide		
Entry not permitted if hydrogen sulfide greater than 10 parts ppm.		
Dust (Some dusts such as wood, coal, grain, sugar are explosive)		
Entry not permitted if visibility less than 5 feet.		
Other Hazards	Check	Yes / No /
Electrical Hazards		
Mechanical Hazards		
Entry not permitted in confined spaces with serious hazards.		
Identify controls for electrical and mechanical hazards, (if applicable).		
Isolation		
Inerting		

Equipment

Personal Protective Equipment	Check /
Hard Hat	
Gloves	
Hearing protection (if needed)	
Eye protection	
Coveralls (if needed)	
Respiratory protection (if needed)	
Foot protection (rubber boots if needed)	
Body harness	
Other equipment	
Lighting (intrinsically safe electrical lighting or equipment)	
Ladders	
Meter (oxygen, combustible gas, carbon monoxide and hydrogen sulfide)	
Entry not permitted without meter.	
Communication equipment (if needed)	
Entry not permitted without communication	

Entry not permitted without rescue provisions	
Type of rescue provided	
Non entry retrieval by attendant (preferred)	
Rescue by on-site rescue personnel. Indicate rescue provided	
Mechanical retrieval equipment harness, lifeline, tripod and winch.	
Mechanical retrieval required for vertical entries over 5 feet.	

First Aid

For non-entry retrieval indicate first aid provider and means for summoning.	Provider: _____ Summoned by: _____
For on-site rescue verify rescue personnel are currently certified and equipped.	On-site rescue will provide first aid. If not, identify other provider: _____
DOT is not equipped and trained and will not provide rescue other than non-entry attendant retrieval.	

Employees

Entrants: _____	_____	_____	_____
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POWER ACTUATED TOOLS

Explosive Actuated Fastening Tools

Explosive actuated fastening tools shall be maintained in proper working order and comply with the design requirements of the 'American National Standards Safety Requirements for Explosive-Actuated Fastening Tools' (ANSI A10.3 – 2006).

Operators and assistants shall use appropriate eye protection. Head and face protection shall be used as required by working conditions and Department policy.

The muzzle end of the tool shall have a protective shield or guard at least 3 ½ inches in diameter, mounted perpendicular to and concentric with the barrel, and designed to confine flying fragments that might create a hazard upon firing.

Where the standard shield or guard cannot be used, a special shield, guard, fixture or jig designed and built by the manufacturer, which provides the same degree of protection, shall be substituted.

The fastening tool shall require at least 2 separate and distinct actions to fire, and shall be maintained to manufacturer specifications with respect to safety features designed to avoid accidental firing.

Before operation, the tool shall be inspected to determine that it is clean and all parts move freely.

Tools shall not be loaded until just prior to their intended use. Only explosive loads specifically manufactured for the tool shall be used.

Loaded or unloaded tools shall not be pointed at a person.

Loaded tools shall not be left unattended. An explosive actuated fastening tool shall not be stored where it is available to unauthorized persons.

If a tool misfires, the operator shall hold the tool in the operating position for at least 30 seconds, then try to fire the tool a second time. If the tool misfires again, the operator shall again wait 30 seconds while holding the tool in the operating position. The operator shall then remove the explosive load in strict accordance with manufacturer's instructions.

Fasteners shall not be driven into materials such as brick or concrete closer than 3 inches from an unsupported edge or corner, or into steel surfaces closer than 1/2 inch from an unsupported edge or corner, unless a special guard, fixture or jig is used for support.

When fastening other materials, such as a 2 by 4 to a concrete surface, it is permissible to drive a fastener of no greater than 7/32 inch diameter shank not closer than 2 inches from an unsupported edge or corner of the work.

Fasteners shall not be driven through existing holes unless a positive guide is used to achieve accurate alignment, nor into a spalled area caused by a previous unsatisfactory fastening.

Tools shall not be used in an explosive or flammable atmosphere.

RAILROAD SAFETY

This Safety Bulletin describes hazards, precautions, and requirements when working on, over or near railroads. Work activity which creates potentially dangerous exposure can vary from maintenance work near at-grade crossings or adjacent to tracks, to inspection, rehabilitation, or replacement of a structure over tracks. Regardless of the operation, special attention and precautions are required when working near live/active rail lines. Procedures in this Safety Bulletin are required in addition to any conditions included in any formal agreement executed between NYSDOT or its agents and the railroad. These procedures shall be discussed at all pre-construction, consultant "get-start", or other similar meetings held at the commencement of contract activities, and at tailgate safety meetings prior to exclusively DOT operations.

HAZARD AWARENESS IS ESSENTIAL TO WORKING SAFELY NEAR RAILROADS

Policy

Anytime it is necessary to work on or over railroad right-of-way, the railroad **shall** be contacted prior to beginning work. This notification requirement is absolute. **No work shall commence until all employees are trained in Roadway Worker Protection specific for that Track's owner.** Work **shall** not be performed unless prior notification has been made. For DOT / contractual / consultant work which is planned / designed / contracted for well in advance of the work, the railroad **shall** be contacted as early as practicable to participate in developing a project-specific safety plan; and will be part of any pre-construction/pre-work meeting(s) prior to work beginning. A copy of standard specifications section 105-09, "work affecting railroads", and/or NYSDOT Safety Bulletin on Railroad Safety, shall be discussed, and ample copies distributed as necessary. Emergency work, where comprehensive pre-planning is not possible, does not preclude nor lessen the importance of strict adherence to provisions in this document.

All railroad lines **shall** be considered "live", until verified that a line is abandoned or "dead" (out of service). Never assume a line is "dead", always assume the line is "live" or active, until confirmed by the railroad for work on or over railroad right-of-way. Work on or over the right-of-way of all active railroad lines requires use of a railroad flag person (with possible exception for "shortlines" as discussed under "procedures").

Definitions

Flag Person – railroad employee assigned to one or more projects involving work on or over railroad right-of-way to, by radio or other signal device, effectively communicate with train operators and workers regarding the movement of railroad equipment on live/active lines while work is in progress.

Exclusive Track Occupancy – method of establishing working limits on controlled track in which movement authority of trains and other equipment is withheld by the train dispatcher or control operator, or restricted by a flag person. The control operator is a railroad employee who controls train movements, and communicates with the flag person before granting authority to

begin work.

Fouling a Track – placement of an individual, materials, or equipment near either rail in such a way that could result in being struck by a train or on-track equipment, and/or is within 4 feet of either rail.

In the Clear – more than 4 feet from the rails. Stay in the clear at all times, and preferably at least 15 feet from the track, unless the flag person has indicated it is permissible to foul the tracks. Equipment used on or near the tracks shall not be considered in the clear if during its operation (crane boom, for ex.) it is capable of entering within 4 feet of the rails. All personnel and equipment shall be in the clear when a train approaches.

Gauge of Track – distance between rails. Stay out of the gauge of track at all times, unless the flag person has indicated it is safe to do otherwise.

Abandoned or Dead – line is out of service, train traffic does not exist.

Red – red markers, flagging or lights shall not be used on railroad right-of-way. Red means "immediate danger". Trains stop without exception. Red signals shall only be used when injured persons or disabled vehicles are on the tracks or at-grade crossings and cannot be moved, or when any condition could cause derailment.

Personal Protective Equipment (PPE) – all railroad personal safety (PPE) requirements and procedures shall be followed. Hard hats (often the railroad specifies the color), high visibility apparel, and safety footwear shall be worn on railroad right-of-way.

Railroad Bulletin - a document prepared daily by the railroad and given to train operators and flag persons to alert them to unusual conditions, including non-railroad work, along the route that day.

Procedures

When tracks on active lines must be crossed (fouled), all track crossing locations shall be identified and agreed to by all those performing the work and the railroad, and accurately listed on railroad bulletins daily. A reliable (verified) mile post marker system, identifying work locations and/or areas where the tracks must be crossed shall be established and given to DOT/contractors/consultants.

When tracks must be crossed, look in both directions every time. When crossing more than one set of tracks, stop after the first set, and look again each way before crossing the second set. Do not cross directly in front of or behind, or lean on, a standing train. Do not crawl under stopped cars, or cross tracks between cars.

Notify the flag person each time it is necessary to foul the tracks, and then proceed only with flag person permission. Efforts to clear tracks must begin immediately anytime the flag person indicates to do so. Even with exclusive track occupancy, always assume the possibility of an

approaching train. Passenger trains have published schedules, but are often off-schedule. Freight trains have no schedules. Railroad equipment is not always heard, especially with other noise. Hazards also exist from broken banding, or loose objects/unsecured loads on the train. Work on railroad right-of-way shall stop each time a train approaches to provide maximum awareness.

DOT/contractors/consultants shall carefully consider availability of "specialty" equipment to allow work to be done in a way that minimizes/eliminates need to foul tracks. If such equipment/systems are reasonably available and not cost prohibitive, they shall be employed.

At the start of each work day, the flag person and project supervisor / leader / competent person shall meet to discuss the work and need to foul the tracks. Discuss job details with each new flag person. Verify with the flag person that the information in the Bulletin is correct for that day. Ensure communication protocols are clearly defined and known to all - specifically clear on how workers will be warned of an approaching train, and when the track is clear. If a flag person's signal is not clear or if the flag person is not visible when track(s) must be crossed track(s) shall not be fouled. Agreements between the railroad and DOT/contractor/consultant regarding these procedures shall be followed throughout the duration of the work.

If DOT/contractors/consultants believe their safety, or that of the public, is in jeopardy as a result of flag person performance, the flag person's supervisor shall be contacted, and work may be discontinued until concerns are properly addressed.

For work on/over local railroads ("shortlines"), generally the same procedures shall be followed. Because trains run less frequently and at lower speeds on local systems, a flag person and/or adherence to more stringent provisions of this policy may not be necessary. However, contact with the railroad shall be made, and mutual agreements established as necessary. Safety associated with work on shortlines shall not be considered less important or necessary than around mainline railroads.

Contact the railroad before excavation on railroad right-of-way. UFPO contact may also be necessary; however, many railroads are not part of UFPO. Presence of multiple underground facilities may require working with several different railroad departments to locate all facilities. Allow adequate lead time for identification, marking, and for the railroad to provide necessary on-site personnel. Excavations on the right-of-way shall be filled at the end of each day.

Special attention to safety requirements is necessary anytime work is performed in proximity to electrical systems and components - - buried, at ground level, or overhead. Electrified rail and catenary systems require strict adherence to all appropriate electrical safety requirements.

Subcontractors shall be fully informed of all safety procedures in place, and held fully accountable for total compliance.

Access roads to and across tracks shall not be blocked or disrupted. Vehicles on access roads shall not be parked within 10 feet of the tracks. Materials, tools, or equipment shall not be

stored on railroad right-of-way. Track ballast shall not be eroded or contaminated. Work areas shall be inspected after each day's work to ensure nothing is left in the gauge of track or in the clear area.

Additional Information

For additional information or clarification, contact the Regional Safety Representative, Rail Coordinator, or Construction Safety Coordinator; or Employee Safety & Health or Rail Safety Bureau in the Main Office.

RENTAL / LEASED AND SURPLUS EQUIPMENT

NYSDOT routinely uses rental and leased equipment for Department operations, and surplus equipment (predominantly from the Federal Excess Property Program). This Safety Bulletin outlines Department policy and procedures for safe use of rental / leased and surplus equipment, and responsibilities of all parties involved. It applies to all Department operations, and programs which rent, lease or acquire surplus equipment.

Policy

Rental / leased and surplus equipment shall meet all safety and operational standards established by the New York State Vehicle & Traffic Law (V&T Law), Occupational Safety & Health Administration (OSHA), American National Standards Institute (ANSI), and Department policy. (Refer to related Safety Bulletins and MAP procedures at the end of this Safety Bulletin). This policy applies to all Department operations and programs; with specific application to Operations Management, Bridge Inspection, Technical Services, and all combined Department / Contractor activity. Consultants working for the Department, and required to use vehicles and motorized equipment, shall also conform to the requirements of this policy. Where a driver or operator is provided with rental / leased equipment used in Department operations, they shall meet the same qualifications and operate by the same standards established for Department employees.

Procedures

Rental / leased and surplus equipment used in Department operations shall meet the same requirements as equipment owned and operated by the Department, including compliance with appropriate V&T Law, OSHA, and ANSI standards and Office of Fleet Administration & Support policies and procedures regarding specifications, inspection, operator training, maintenance, and record keeping.

Rental / leased and surplus equipment shall not be allowed into service until the appropriate Operators Manual is available and an acceptable level of training provided to employees. Depending upon the manufacturer, an applicable Operators Manual may be available from similar equipment already in use in the Department.

A preliminary inspection shall be conducted on all surplus equipment designated for acquisition before it is transported to a Department facility to ensure that there is no serious safety or health deficiencies/concerns that would affect its safe transport or use. A final (more thorough) inspection shall be conducted by Office of Fleet Administration & Support on all surplus vehicles and motorized equipment acquired (trucks, tractors, aerial lifts, cranes, excavators, etc.), in conjunction with appropriate Program Management and Employee Safety & Health staff before use in Department operations. All equipment / power tools shall be inspected by a competent person for safe use. Training shall be provided as appropriate.

Aerial Lift Devices

Aerial lift devices are specialized equipment, and as such require specialized and/or additional consideration to ensure safe operation. Aerial lift devices must be operated by certified operators. The aerial lift device must be appropriate for the task, i.e. – electrically protected aerial lifts must be used when working in proximity to electrically energized equipment.

Responsibility

Program Management and Supervision, Employee Safety & Health staff, and Office of Fleet Administration & Support are responsible for compliance with requirements of this Safety Bulletin to ensure safe operating procedures. Vehicles / equipment which do not meet the requirements of this policy shall not be acquired or used in Department operations.

Program Management and Supervision oversight is a critical, primary link between the equipment acquisition process and its use, and responsible to ensure rental / leased equipment used in program operations complies with this Safety Bulletin. Operators of such equipment shall be responsible to be fully trained and capable of recognizing potential hazards.

Program Management and Supervision shall assure that proper information (manuals) and / or training is provided by the supplier or through in-house resources.

Office of Fleet Administration & Support shall approve use of surplus vehicles or motorized equipment in Department operations. Regional Safety & Health Representative 2's and Equipment Operator Instructors shall help ensure equipment safety and proper operator training.

Related References

MAP Inspection of Aerial Lifts Devices

MAP Reporting Vehicle Accidents for Department of Transportation Employees
Operating Vehicles or Equipment on State Business

ANSI Standard Vehicle Mounted Elevating and Rotating Aerial Devices

ANSI Standard Vehicle Mounted Bridge Inspection and Maintenance Devices

ANSI Standard Self-Propelled Elevating Work Platforms

ANSI Standard Boom-Supported Elevating Work Platforms

Refer to the following Safety Bulletins for additional information:

Safety (Seat) Belts

Aerial Lift Devices

Forklifts

Backing Vehicles & Equipment

Safe Operating Conditions of Vehicles & Equipment

Modification of Vehicles & Equipment

RESPIRATORY PROTECTION

Respirators reduce or eliminate employee exposure to hazardous chemicals and substances that can enter the body by inhalation. Respirators are only effective when used properly, and when correct respiratory protection is selected for the hazard and/or environment. Safety Bulletins on Compressed Breathing Air, Abrasive Blasting, Lead and Welding, Cutting, Brazing and Heating also discuss applications of respiratory protection.

Policy

The N.Y.S. Department of Transportation shall conform to appropriate respiratory protection requirements in full compliance with Occupational Safety and Health Administration (OSHA) standards.

Regulations are addressed in OSHA Standard 29CFR1910.134, requiring an employer to have a written respiratory protection program to include:

- **Procedures for selecting and using respirators.**
- Department Safety Bulletins cited above are examples of such procedures, for the exposures resulting from those operations.
- **Medical evaluation for respirator users.**
- **Fit-testing procedures for tight-fitting respirators.**
- **Procedures that prohibit wearing respirators when conditions prevent a proper seal, such as growth of facial hair or eyeglass components.**
- **Procedures for cleaning, storing and disinfecting respirators (hygiene program).**
- **Procedures to ensure adequate air quality for air-supplied respirators.**
- **Training on proper use of respirators and their limitations for employees required to wear respirators.** (Training will include fit testing for proper seal, and nature of respiratory hazards).

Procedure

Evaluation of tasks will be made by management or supervision, with the assistance of Employee Safety and Health, as necessary, to determine if respiratory protection is required. Appropriate respiratory protection will be selected based on specific employee exposures.

Management must provide a physical examination or medical evaluation to determine each employee's fitness to wear a respirator, before the initial fit-testing. Medical evaluations require completion of a medical questionnaire, found in Appendix C of the OSHA standard. Medical questionnaires must be evaluated by a physician or licensed health care professional. Employees refusing a physical or a medical evaluation cannot be assigned to work in areas requiring respirator use. Medical status will be reviewed periodically as specified by the certifying physician or licensed health care professional.

Employees wearing dust masks (or disposable respirators) on a voluntary basis, providing

there is no over-exposure, are not required to be included in the written respiratory protection program. Management must only ensure that the dust masks are clean, do not interfere with employees' ability to work safely, and that a copy of Appendix D of the OSHA standard is provided for the employee.

Employees will be given a qualitative or quantitative fit test referenced in mandatory Appendix A of the OSHA standard. Qualitative fit testing uses a chemical that can be detected by smell (banana oil), or taste (saccharin). This test gives estimates of protection (pass/fail). Quantitative fit testing uses an instrument to measure and compare contaminant levels inside and outside the face piece. This test yields a numerical protection factor (multiple by which contaminant concentration is reduced by the respirator).

Employees shall be fit tested annually, or whenever there is a change in facial features, weight, scars, or extensive dental work. Supervision shall reevaluate respiratory protection requirements when there is substantial change in work practices, materials used, and work location. Respirator wearers shall be trained in proper maintenance, and the limitations of respirators; and receive demonstration and practice in how to wear and adjust the respirator, test for effectiveness, and determine proper fit.

Type of Respiratory Protection

- **Half-Face Mask Air-Purifying Respirator** --- for environments that contain less than 10 times the PEL of a contaminant. They are NOT to be used in oxygen deficient environments (less than 19% oxygen). Cartridges must be specific for the contaminant present. Workplace environments with multiple contaminants must be evaluated for each contaminant. If the respirator does not protect against overexposure, a supplied air respirator is required.
- **Full-Face Mask Air-Purifying Respirator** --- for environments that contain less than 50 times the PEL of a contaminant. The full-face mask protects eyes from contaminants in the environment. (See half-face masks for limitations.)
- **Power-Air Purified Respirator (PAPR)** --- for environments up to 100 times the PEL for contaminants not immediately dangerous to life and health at that concentration if the respirator fails. A battery operated air pump is worn to supply the face piece with local purified air. Cartridge selection is based on the contaminant(s) present. PAPR's are not for oxygen deficient atmospheres.
- **Supplied-Air Respirator** --- for maximum protection against airborne contaminants. Airline respirators must be used only in atmospheres which are not immediately dangerous to life and health, and from which the wearer can escape without the use of the respirator.
- **Self-Contained Breathing Apparatus (SCBA)** are not allowed to be used within the Department of Transportation, unless specifically approved by the Director of Employee Safety and Health and appropriate training and health screening has been provided.

RESPONSE TO MOTOR VEHICLE ACCIDENTS INVOLVING HAZARDOUS OR UNKNOWN MATERIALS SPILLS

Motor Vehicle Accidents (MVA) involving petroleum and chemical spills, and spills of unknown nature, present challenging scenarios and environments in which Department employees must perform their duties. These accident scenes can be chaotic, stressful and potentially dangerous. Usually, there are multiple agencies involved and diverse emergency response activities occurring simultaneously. This document provides recommended safety measures for Department forces responding to an MVA involving such a spill, consistent with NYS Department of Labor, Public Employee Safety and Health (PESH) regulations, DOT safety and health standards, and NYSDOT / NYSDC MOU (#AM06352). Operating within the scope of these responsibilities will help protect the safety of DOT employees, and contribute to a timelier, efficient resumption of highway operations.

Hazardous materials are substances with one or more of the following characteristics:

- Substances/materials determined by the U.S. Secretary of Transportation to pose potential health risk.
- Chemical substances (solid, gas, or liquid) toxic to humans; unprotected exposure to these chemicals may result in severe illness.
- Dangerous goods or restricted articles that represent a hazard unless properly identified, classified, packed, and labeled per valid Dangerous Goods Regulations.
- Particles/substances capable of posing significant risk to health, safety or property when transported.

General Rules

Scene Safety: DOT supervisors arriving at an MVA are first responsible for ensuring their own personal safety and the safety of subordinates and co-workers, and only after that for the safety of others at the scene. Supervisors shall not enter the immediate area of an accident scene or allow their subordinates to approach an MVA if uncertain that the area is safe due to spills of hazardous or unknown materials.

Communication: When approaching an MVA, employees in Department vehicles or equipment should pull onto the shoulder and use vehicle warning/hazard lights to alert approaching motorists. If it is not possible or safe to park on the shoulder, employees should drive past the accident scene (if possible), and as soon as it is safe to do so, stop to report the accident as described below.

Employees who discover any MVA (including those involving a spill) shall as appropriate:

- Call 911: For all life threatening and other immediate emergencies involving police, fire and rescue, if DOT forces are first on scene.
- Identify and establish contact with the Incident Commander, if DOT forces are not first on the scene. If Incident Commander has not yet arrived or been designated, identify and

- contact upon arrival/designation.
- Notify immediate supervisor. It is generally a supervisory/management function to notify the Transportation Management Center (TMC) and other necessary Regional resources and the Department of Environmental Conservation (DEC).
- For MVA's involving suspected hazardous materials spills, employees shall, consistent with their training, use the most current USDOT "Emergency Response Guidebook" to accurately identify and report materials involved directly to Chemtrec 1-800-424-9300; or notify the TMC, which in turn will call Chemtrec.

Chain-of-Command: It is important for Department employees to work within the DOT Regional Chain-of-Command at all MVA scenes. Department employees shall always answer to DOT supervision/management. However, initially other responding agencies may have more immediate functions and exercise more or total control over an accident scene. In general, police agencies will act as Incident Commanders at scenes with possible criminal activities and/or fatalities; fire departments at scenes involving fire/extrication; emergency medical services at scenes with serious injuries; and DEC for hazardous or unknown material spills. In many cases, more than one of these scenarios may exist, and an on-scene decision regarding incident command will be required. In some cases, responsibility may be shared. It is imperative that DOT forces identify and establish communication with the Incident Commander on scene as soon as possible.

Department Responsibilities

Under the law most spills are cleaned up by the responsible party (owner of the contents) under oversight of DEC. When the responsible party is unknown, unwilling, or unable to do so, DEC will call a standby contractor, pre-approved by DEC for such work. Often the location/nature of the spill will require DOT management to coordinate closely with DEC, and use resources to assist as follows:

Traffic Control: DOT will be responsible for providing traffic control, if on scene. It is not always the case that DOT forces are on scene, for example spills of lesser quantities, non-hazardous materials, and those not affecting traffic movement (within ROW, but off pavement/shoulder). In some cases, DOT is not even notified at the time of the accident, and unaware until substantially later. DOT forces who arrive after others have established traffic control procedures shall assume responsibility and/or assist as necessary existing resources. The Resident Engineer or designee shall coordinate with DEC and police regarding length of time needed to provide proper, effective clean-up and other response activities. DEC will provide guidance on safe distances for traffic at spills of hazardous or unknown substances.

Spill Containment: For spills of hazardous or unknown materials, or at spill locations with known petroleum products, upon request of DEC, DOT may provide passive containment measures at a distance deemed safe. Such measures typically include depositing materials to prevent contaminated runoff from entering catch basins, streams or wetlands. However, it is important to recognize that the extent of assistance is directly proportionate to the degree of hazard posed.

Spill Clean-Up: In the absence of the owner/operator, the proprietary responsibility for clean-up and removal of hazardous materials shall be by a DEC-approved standby contractor. Upon request of DEC, DOT will spread sand and/or absorbent on spills of known petroleum products (known to be harmless in small quantities, such as diesel fuel). Clean up by DOT forces shall be performed only as a last resort and in consultation with DEC (if on scene), but only at direction of Department management (typically, Resident Engineer or Assistant).

Spill Clean-up by DOT forces may be permitted when:

- The spill is of a product known to be non-hazardous.
- The spill is a petroleum product, typically diesel fuel or engine oil, released as the result of the MVA, or a known non-hazardous waste material.
- Removal is performed in consultation with DEC.
- Clean-up involves absorbents or absorbent pads and/or removal by dry broom or mechanical broom.
- Employees are properly trained and use appropriate personal protective equipment (PPE).

Spill Clean-up is prohibited when:

- The spill involves known hazardous material(s) or unknown substance(s).
- The spill is of a petroleum or hazardous waste product from the container(s), cargo tank(s) and/or from transport hoses and lines related to the cargo.
- Employees lack appropriate PPE and/or training.
- Chemicals are required to clean up the spill.

Additional Work Practices: It is impossible to anticipate the nature of each response requiring DOT involvement. However, as a general rule, Department employees should only clean up ROW spills that are of a similar nature/type to those that might occur at Department facilities, using the following work practices:

- All vehicle engines operating in the immediate spill area shall be turned off.
- Smoking is prohibited.
- Hand-to-mouth transfer from eating, drinking, etc. shall be avoided; drinking water and food shall be kept away from the spill.
- The spill shall not be washed down drains or drop inlets.
- Only as permitted by DEC (if on scene), small quantities of material-contaminated sand or absorbent may be dry-broomed to the side of the road; and/or picked up by shovel and placed in a properly labeled waste container. If DEC is not on scene, DOT management will have to make those decisions unilaterally. At DEC direction, large quantities may be swept and collected by self-propelled sweepers.
- Avoid walking on the spill surface and sweep absorbent to the center of the spill area.
- If road is still wet after first application of absorbent, apply a second treatment.
- Employee debriefing may be appropriate after response.

Clean-Up Rationale

DOT managers shall “err on the side of safety” when deciding whether to clean up non-hazardous waste or petroleum products, and whether Department resources can be safely employed to quickly and decisively improve public safety. For example, spills requiring employees to broom clean 100 (5 lb.) bags of absorbent should be considered beyond DOT capacity; however, it may be reasonable to consider clean up with the same amount of absorbent using a self-propelled sweeper.

Diesel fuel, gasoline or petroleum product clean-up shall be limited to fuel tank(s) and engine spills. It may not be appropriate for DOT forces to clean up spills from fully loaded, larger fuel tanks (like buses and over-the-road trucks).

Storage: The first priority is to remove spill clean-up materials directly to a disposal facility using a DEC-approved standby contractor. If not feasible, the Resident Engineer or designee will assist DEC in determining an appropriate location.

Personal Protection

Head Department-approved hard hat.

Eye Safety glasses or goggles designed to prevent splashes, portable eyewash.

Hand Petroleum-resistant gloves (disposable nitrile rubber preferred - - - not latex).

Body Department-approved high-vis apparel; if available, disposable coveralls should be worn under high-vis apparel.

Feet Department-approved safety footwear, covered with disposable booties or oil resistant over-boots.

If non-hazardous materials contact skin, thoroughly wash using soap and water. Change clothing if necessary to avoid further contact.

Training

Department employees shall receive Hazard Communication/Right-to-Know training as required by OSHA/PESH. Training shall include a discussion on Safety Data Sheets for diesel fuel and motor oil, and appropriate clean up techniques for cleaning spills considered small and limited (incidental).

Department employees shall also receive Emergency Response training at the first responder level, including how to use the USDOT “Emergency Response Guidebook”, how to report MVA’s with spills, and the contents of this Safety Bulletin.

Health Effects for Diesel Fuel (most commonly spilled material)

Inhalation (Breathing) - Excessive exposure may cause irritation to nose, throat, and respiratory system. Other effects may include headache, dizziness, loss of balance and coordination. Clean up of small petroleum spills generally will not result in excessive exposure;

however unusual circumstances such as high pavement temperatures may result in higher airborne concentrations. Department employees experiencing any symptoms or noticing symptoms in others should notify supervision immediately.

Ingestion - The major health threat of ingestion occurs from aspiration - - - breathing liquid drops into the lungs. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, and respiratory failure. Ingestion may cause nausea, vomiting and diarrhea, and nervous system effects.

Eyes - Contact with liquid or vapors may cause mild irritation. Flush eyes with water for 15 minutes.

Skin - Repeated and prolonged contact may cause irritation. Fuel may be absorbed through skin if large body areas are repeatedly exposed.

Related References

DOT / ENCON MOU (#AM06352)
USDOT "Emergency Response Guidebook"
OSHA 29 CFR 1910.120 and 1200
Petroleum Bulk Storage Regulations, 6NYCRR Parts 612-614
Environmental Handbook of Transportation Operation
Transportation Maintenance Safety Manual
Spill Prevention, Control and Countermeasures (SPCC) Plans

SAFE OPERATION & MODIFICATION OF VEHICLES AND EQUIPMENT

Operators and supervisors must ensure that all vehicles and equipment are in safe operating condition before their use. Emphasis must be placed on periodic preventive maintenance, daily pre and post operational checks, timely reporting of suspected problems, and sound judgment in assessing equipment condition and ordering equipment into service. In addition, trucks necessitating a Commercial Drivers License (CDL) require pre/post-operation inspection and reporting of suspected defects.

The following requirements assure the safe operating condition of all vehicles and equipment:

- Vehicles and equipment must meet NYS Vehicle and Traffic Law, Commercial Motor Carrier Regulations, and/or other associated requirements for safe operating condition.
- When a suspected defect is detected by an operator which could have an impact on the safe operation of a vehicle or piece of equipment, he or she must immediately report it to their immediate supervisor and complete a Troubled Vehicle Report (EM-3).
- When a safety-related EM-3 is filed with Office of Fleet Administration (OFAS), and the defect is identified and confirmed, the problem must be corrected before the vehicle or equipment is operated. The need for immediate repair will be contingent upon the severity of the problem and the degree of danger it poses, and the threat to public safety if the equipment is not operated (emergency conditions). In an emergency, the problem must be corrected as soon as possible after detection.

Supervisors shall use sound judgment in ordering equipment into service which has been reported by an operator to have a defect which could impact on its safe operation. Supervisors shall consult with OFAS with any questions regarding the safe operating condition of vehicles and equipment.

Operators shall use sound judgment in their assessment that an actual or potential hazard exists.

Modifications of Vehicles and Equipment

Safety devices shall not be removed from equipment/machinery/vehicles, other than to perform maintenance or repair. Equipment/machinery/vehicles shall not be operated with safety devices removed, or known to be inoperable or defective. If during normal operations, a task cannot be accomplished with all safety devices operational, other means shall be used to perform the task.

Exceptions

If the inability to operate creates an imminent threat to public safety, this policy may be exempted long enough to respond to the emergency. For example, the back-up alarm on a loader becomes inoperable during a snow storm. The loader is the only means to load trucks. The loader may be used.

The Department will not make or allow modification to vehicles or equipment to facilitate operation by individual employees unless such modification conforms to approved equipment specifications and safety requirements, and does not render the equipment unsuitable or unsafe for use by other operators. This includes features such as seats, hand controls and floor pedals.

The Director of OFAS may approve modifications which conform to approved specifications and safety requirements to ensure equal access to employment, training and promotion opportunities, and which conform to the Americans with Disabilities Act (ADA) guidelines and procedures.

Related References

MAP -7.11-2	Reporting Needed Repairs or Service on EM-3D, Troubled Vehicle Report
TMI -	Pre/Post Trip Inspections
Form:	EM-3D - Troubled Vehicle Report

SAFETY (SEAT) BELTS

NYS DOT has had a safety belt* policy since 1982. In 1984, a New York State Vehicle & Traffic Law (V&TL) mandating safety belt use was adopted. Safety belts, when used properly, very significantly reduce the risk of fatal injuries and the severity of non-fatal injuries incurred in vehicle crashes. There is no good or valid reason not to wear them.

The express purpose of the Law and Department policy is to save lives and reduce the severity of injuries incurred in vehicle/equipment crashes. This Safety Bulletin reiterates and reinforces Department commitment to total compliance with safety belt usage.

Policy

All department employees shall wear safety belts while traveling or working in any state vehicle/equipment, and any other vehicle/equipment while on state business. Safety belts shall be worn any time a vehicle/equipment is in motion, regardless how briefly. Safety belts shall be worn properly; over the shoulder and across the hips. Safety belt extensions (if needed) shall only be purchased from the original equipment manufacturer (if offered) and used in full conformance with all manufacturer's directions and recommendations.

This policy applies to all employees; drivers and front and/or rear-seat passengers alike, without exception, and includes all non-department persons in state vehicles/equipment on department business or in private, rental, or leased vehicles used for department business.

Seat belts DO save lives. ...but only when they are used.

*For purposes of this and all other Department policies and issuances, the terms "safety belt" (proper legal term) and "seat belt" are synonymous and interchangeable.

SAFETY FOOTWEAR

The NYS Department of Transportation requires safety footwear for employees engaged in work activity creating reasonable potential for foot injury. This includes but is not limited to exposure to falling or rolling objects; working in close proximity to wheel and track vehicles; jack hammering and chipping; drilling operations; changing plow and wing blades; and material/equipment handling. Each Program, in consultation with the Regions, shall decide who, by title and/or assignment, shall be required to wear safety footwear. Effective 4/1/08 employees deemed eligible by management shall receive an annual safety footwear allowance of \$100. Those eligible for footwear designed specifically for employees involved predominantly in tree work shall receive \$140 annually.

Management may distinguish between “working in” and “visiting” sites where potential for foot injury exists to help formulate reasonable and realistic program policy. Visitors to such sites not required to wear safety footwear shall use good judgment to minimize exposure to locations and/or operations that pose potential for foot injury, and comply with Department Work Clothing Guidelines relative to foot protection. OSHA requires that organizations conduct annual Personal Protective Equipment (PPE) assessments to evaluate hazards and identify appropriate PPE requirements. Regional Managers should consult Regional Safety Representatives regarding PPE assessments for foot protection.

Safety footwear shall meet American Society for Testing & Materials (ASTM) Standard F2413. All ASTM approved safety footwear has information on a stamp or label as an integral part of the footwear, as shown below:

Footwear Label	Description
ASTM F2413	Meeting Current ASTM Rating
F/1/75/C/75 or M/1/75/C/75	Footwear worn by female (F) or male (M) with 75lbs. impact and compression rating
EH	Any additional ASTM rating information; for example “EH” for Electrical Hazard (non conductive).

Footwear having stamps or labels bearing older ANSI ratings is acceptable.

Safety footwear shall be provided annually at no cost to eligible employees. The Department shall make every effort to provide approved safety footwear on state contract through vendor services at DOT facilities during normal working hours. Management shall limit styles to exclude, for example, “safety-toe sneakers” that do not provide overall foot protection afforded by work-related footwear, consistent with long-standing Department Work Clothing Guidelines.

Many program areas may have their own requirements. Consult your program guidelines prior to purchasing.

Employees may choose to purchase safety footwear at a cost higher than the annual allowance. Those who do will be required to pay any amount above the annual allowance. These purchases must conform to all DOT standards and style limitations. Employees who act

independently shall provide proof that footwear meets ASTM standards. Management shall verify that safety footwear purchased independently by employees meets all Department requirements. An eligible employee shall only receive one pair of approved safety footwear for the annual \$100 allowance to ensure higher quality.

With the exception of temporary employees, any employee may choose to defer the purchase of safety footwear, and “bank” the first year annual allowance for that year towards the purchase of safety footwear and receive up to a \$200 allowance toward the 2nd year purchase. New employees who provide their own safety footwear when hired are allowed to bank until their 2nd year of eligibility. Employees, who decide to “bank”, have the option to purchase no more than two pair of safety footwear. Any left over partial balances cannot be carried over from either the 1st or 2nd year.

Upon substantiation by management of an employee’s claim that safety footwear is damaged beyond further useful wear as a result of work performance (not by negligence, misuse, or loss), the Department shall replace safety footwear. The employee shall surrender the damaged pair upon replacement. Individual claims for replacement shall be decided by the Program Manager, and funded from the Program budget. Employees will be eligible for an annual allowance (a new pair of safety shoes) one year from the replacement date.

For legitimate special medical needs, consideration shall be given, for example, to temporarily exempt employees from the policy, and/or reimburse employees at a higher level. Requests shall be reviewed and evaluated on an individual basis by Program Management, the Administrative Services Director and/or Regional Safety Representative. Management shall give employees reasonable benefit of doubt with regard to legitimate medical issues, verified with medical documentation, as necessary. Exempted employees shall, at a minimum, conform to Department Work Clothing Guidelines relative to foot protection.

Managers shall ensure compliance by all employees required to wear safety footwear. Employees found in persistent non-compliance shall be subject to progressive and corrective administrative action.

SILICA (CRYSTALLINE)

Crystalline silica is a common mineral in sand, quartz and granite. Quartz is the most common type of crystalline silica. Inhalation of airborne crystalline silica can cause silicosis, a disabling, dust-related lung disease. Depending on length of exposure, silicosis is a progressive and potentially fatal disease. Inhaling silica dust is associated with diseases, such as tuberculosis and lung cancer. Materials containing even small amounts of crystalline silica may be hazardous if used in ways that produce high dust concentrations. Operations that can create airborne silica exposure include sandblasting, rock drilling, stonecutting, quarrying, gunite work, lead-based paint encapsulation, asphalt paving, and tunneling; concrete demolition, hammering, chipping, cutting, milling; and sweeping concrete or masonry dust.

Current Exposure Limits

NYS Public Employee Safety and Health (PESH) has a Permissible Exposure Limit (PEL) for crystalline silica. The current PEL for respirable dust containing crystalline silica (quartz) for the construction industry is measured in millions of particles per cubic foot (mppcf). Unlike other chemical and dust exposures, the PEL for crystalline silica is calculated using a formula that takes into account the percent and type of crystalline silica in a material. Experts differ as to whether the PEL for crystalline silica is protective enough of workers. Therefore, the Department will minimize employee exposure through aggressive implementation of work practice controls, use of personal protective equipment, personal hygiene practices, and periodic air sampling associated with various tasks listed above.

Work Practice Controls

Key to preventing exposure is keeping silica dust from becoming airborne. Controls can be as simple as wetting the dust before it becomes airborne. Use of the following methods also controls respirable crystalline silica:

- Use a wet saw for sawing concrete or masonry.
- Use abrasives containing less than 1% crystalline silica during abrasive blasting.
- Use dust collection systems for dust-generating equipment. When purchasing, specify equipment with dust controls. Always use dust control systems available, and keep well maintained. Equipment should not be used if the dust control system is not working properly.
- Self-propelled equipment such as sweepers should have a positive-pressure cab with air conditioning and filtered air supply.
- Remove dust from equipment with a water hose, not compressed air. Use vacuums with high efficiency particulate air (HEPA) filters. Use wet instead of dry sweeping.

Protective Clothing

To avoid contaminating non-work environments, and personal and work vehicles, use disposable coveralls. Wash clothes and shower before leaving the worksite, when possible.

Respirators

Respirators are not the primary means of preventing or minimizing exposure to airborne contaminants. Effective source controls such as substitution, wet methods, and good work practices are primary means of protecting workers. However, when source controls cannot keep exposures below the PEL, controls should be supplemented with respirators. Respirators shall be used in accordance with Respiratory Protection Safety Bulletin.

Abrasive Blasting

Only Type CE supplied air abrasive-blasting respirators are suitable for abrasive-blasting. However, Type CE may also be used for other exposures. Abrasive blasting of concrete or asphalt will always release crystalline silica regardless of whether the blasting agent is itself free of silica. However, the amount of crystalline silica released is significantly less with crystalline-free abrasive agents. Use of these blasting agents is encouraged. Sand should not be used for blasting.

Currently, four (4) Type CE abrasive-blasting respirators are approved:

- Continuous-flow respirator with loose-fitting hood and an assigned protection factor (APF) of 25. (Commonly provided by the Department.)
- Continuous-flow respirator with a tight fitting face piece and an APF of 50.
- Positive-pressure respirators with a tight fitting, half-mask face piece and an APF of 1,000.
- Pressure-demand or positive-pressure respirator with a tight fitting full face piece and an APF of 2,000.

Non-Abrasive Blasting Operations

For operations other than abrasive blasting such as jack hammering, chipping, milling, or cutting concrete, use at a minimum a N99 or HEPA disposable respirator. When operations are particularly dusty or of long duration, air monitoring should be provided by Employee Safety and Health to measure exposures to respirable crystalline silica.

Training

Employees exposed to crystalline silica on an occasional basis should receive training, for instance tailgate safety training, before such tasks are undertaken. Employees provided with respirators for protection from crystalline silica shall be provided with formal respiratory protection training. Training should include a discussion of this Safety Bulletin. Further training assistance is available from Employee Safety and Health.

Personal Hygiene

- Do not eat, drink, or use tobacco products in dusty areas.
- Wash hands and face before eating, drinking, or smoking outside dusty areas.
- Park personal and work vehicles where they will not be contaminated with crystalline silica.

TAILGATE SAFETY TRAINING

Tailgate safety meetings are informal training conducted during the normal work day by first-line supervisors for small groups of employees, usually a crew. Their purpose is to teach and remind employees of the safe way to do a job, usually one to be performed that day. Tailgate safety meetings must have a specific purpose or topic to be effective.

Tailgate safety training is mandatory for all Department of Transportation employees.

First-line supervisors are the most effective persons to conduct this training because they are responsible for crew safety and have the necessary authority. They take their crews to remote job sites and determine the extent to which employees will adhere to safe work practices.

Usually the best time for a meeting is before the normal work day. It provides positive reinforcement about job safety to think about during the ride to the job site, and throughout the day.

Tailgate safety training shall be done:

- When a certain task (seasonal, perhaps) hasn't been performed for some time.
- When new employees join the crew.
- When a specific task or location poses safety hazards.
- To review a recent accident or "near miss" in this crew or another.
- When a supervisor feels employees are too lax about safety.
- To review traffic control procedures prior to setting up.
- To review proper use of personal protective equipment.
- To check vehicle and equipment safety.

Managers and/or Regional Safety Representatives can help supervisors develop topics for tailgate safety meetings.

Training shall be documented and attendance records forwarded to the Regional Training Coordinator.

TICK RELATED DISEASES

This policy is designed to increase awareness about the existence of Lyme disease throughout New York State; and to inform employees about the potential for contracting disease caused by exposure to ticks, and the precautions to avoid contact.

Ticks are small parasitic arachnids (related to spiders) that live on blood. Three common species that cause disease are Deer Tick, Dog Tick and Lone-Star Tick. Common reference to Deer and Dog ticks is often misleading since ticks are also found on many warm-blooded animals such as mice, birds, domestic animals and humans, and can be found in tall grass when they are not feeding. Four diseases associated with ticks are: Lyme disease, Ehrlichiosis, Rocky Mountain Spotted Fever and Babesiosis. All of these diseases are caused by microorganisms that live in the infected tick. When the tick bites an individual the microorganism is passed onto the host.

Lyme disease - a bacterial infection transmitted only by the Deer Tick. Ticks infected with Lyme disease can be found throughout New York State. Sixty percent of people infected by Lyme disease will develop a circular, red, warm, rash with a "bulls-eye" appearance.

Primary Early Stage Symptoms - fever, nausea, testicular and lymph node enlargement, malaise, muscle and joint aches and pains, and rash. These symptoms appear 3-30 days after infection.

Secondary Stage Symptoms - meningitis, encephalitis, and carditis, which if left untreated can result in neurological symptoms, heart problems and arthritis.

Prevention

- **Carefully inspect the entire body – especially in groin area and arm pits after being in areas of potential exposure. Prompt removal of ticks is important. Deer ticks must remain attached at least 36 hours to transmit Lyme disease.**
- **Wear clothing with tight cuffs at the wrists and ankles.**
- **Use insect repellent----products containing DEET work well. 100% DEET preparations may cause harmful side effects in some people. Only use these products on clothing, not on skin.**
- **Tuck pants into socks, use two-sided tape around ankles to immobilize crawling ticks.**

Treatment - Lyme disease, Ehrlichiosis, and RMSF are treated with antibiotics. Babesiosis is treated with drugs used for Malaria. In all cases, a physician is necessary for proper treatment.

Removal

If a tick starts to bite, prompt removal is essential. Removal before the tick is completely embedded in the skin will greatly reduce chance of infection. The only safe method of removal is with tweezers or specifically designed extractors. Grab the tick by the **head and mouth** as close to the skin as possible and pull straight out. Avoid squeezing the **body** of the tick during extraction. Clean area with soap and water to avoid secondary infection. Inspect the bite area after removal to assure that all of the tick has been removed. Never attempt to remove a tick with heat, Vaseline, or chemicals, since such techniques may cause the tick to regurgitate infectious material into the bite.

Other Tick Related Diseases

Rocky Mountain Spotted Fever (RMSF) - found in the Long Island area, mostly in Dog Ticks, but frequently found in other tick species. Symptoms appear within two weeks of the bite of an infected tick. RMSF is characterized by a sudden onset of moderate to high fever (which can last for two weeks), severe headache, fatigue, deep muscle pain, chills, and rash. The rash begins on arms or legs, may include the palms of the hands or the soles of the feet, and can spread rapidly to the rest of the body.

Babesiosis - a rare tick-borne disease that can be found in the Long Island area and is carried by the Deer Tick. Babesiosis is of most concern to the elderly and individuals with weak immune systems. It takes from 1 to 12 months for symptoms to appear. Infections can occur without producing symptoms. Common symptoms include fever, fatigue and anemia, lasting from several days to several months.

Ehrlichiosis - found in the Deer Tick, Dog Tick and the Lone-Star Tick. Cases have been diagnosed in Westchester County and the lower Hudson Valley and Long Island. Symptoms appear 1 to 3 weeks after infection. Common symptoms are fever, muscle aches, weakness and headache. People may also experience confusion, nausea, vomiting, and joint pain. Rash is not common.

TRANSPORTING GASOLINE AND DIESEL FUEL

Transportation of fuel shall be accomplished by portable fuel cans with a maximum capacity of 5 gallons each, or cargo fuel tanks. All containers shall be properly labeled. Gasoline shall only be transported in Federal DOT approved Type I or Type II 5 gallon portable gas cans, with a limit of four (4) cans per vehicle. Portable five (5) gallon cans transported on any Department vehicle or equipment shall be fastened in a vented box, or lashed to the body of the vehicle with web straps, using eyebolts through the side of the body backed up by a 3 inch x 3 inch x 3/16 inch steel backing plate. There shall be two eyebolt anchor points for each can. Cargo tanks shall not exceed 110 gallon capacity. Cargo tanks shall be constructed of a minimum of 14 gauge steel or 16 gauge aluminum.

'No Smoking' sign shall be prominently displayed on the vehicle, and smoking prohibited within 50 feet during fueling.

Pick up trucks shall be used to transport fuel whenever possible. Tanks shall be mounted directly against the front of the truck body box and fastened to the frame whenever possible with anchor bolts. If fastening to the frame is not possible, and it is necessary to mount the tanks solely to the box, a 6 inch x 6 inch x 3/16 inch steel backing plate shall be used for each tank.

Any void between tanks shall vent to the atmosphere by a minimum of a 1 inch inside diameter drain. Any connecting structure shall have inspection openings of sufficient size and number to permit proper visual inspection. All joints shall be welded in conformance with ASME Code of Welding Procedures, and where possible accessible for inspection.

A 10 gauge steel bulkhead shall be mounted directly behind the fuel tank, securely fastened to the body of the truck on the floor and both sides. There shall be at least 1 inch space between the bulkhead and the fuel tank. The tank shall be equipped with a fill vent assembly with a flame arrester.

Pumps shall be UL approved, with wire cored bonding hose and antisiphon valve. Any piping between the pump and the tank shall be Schedule 80.

Vehicles transporting fuel shall be equipped with at least one 10 pound fire extinguisher, either BC or ABC dry chemical, and mounted to be easily accessible.

The vehicle shall be equipped with a wire mesh cap protector screen. The exhaust system of the truck in the area below where the cab and body meet shall have a heat shield.

VEHICLE WARNING LIGHTING STANDARD

Information contained in this Bulletin constitutes Department policy for vehicle warning lighting. Lighting devices specified are not to be interpreted as taking the place of any lighting devices required in NYCL Chapter 71, *New York State Vehicle and Traffic Law*. All lighting devices, except where noted, are in addition to manufacturer installed lighting required by Federal and/or NY State Law. Additionally, unless otherwise noted, the lighting requirements outlined herein are not retroactive.

This standard has been developed based on studies published by the Virginia Polytechnic Institute and accepted by the Transportation Research Board and Federal Highway Administration (2008), and is designed to uniformly address the need for vehicle visibility while engaged in highway work.

Automobiles/Minivans (Passenger Vehicles):

Manufacturer installed 4-way flashers and, when in or near right-of-way, 1-bulb revolving amber beacon. On minivans regularly used for highway work, tailgate striping (yellow or blue retro-reflective) and one or more one-bulb rotating beacon(s) or dual flashing LED beacons shall be added (see section on “*visibility enhancements*”).

Pick-up Trucks/Suburban/Large Vans:

Dual one-bulb rotating beacons or dual flashing LED beacons affixed to the vehicle roof or, if so equipped, cab shield/protector (self-leveling) and approved tailgate striping. When used in high-hazard conditions (i.e., Safety truck, Supervisor truck, etc.), two supplemental light-emitting diode (LED) flashing lights and an approved arrow stick shall be added (see section on “*visibility enhancements*” for conditions of arrow stick use).

Small Dump/Stake Body Trucks (Standard or Crew Cab):

Dual one-bulb rotating beacons or dual flashing LED beacons affixed to the highest point of the truck (cab shield or roof), two supplemental LED flashing “swing” lights (lights that remain horizontal or otherwise can be seen clearly to the rear when dump body is raised) mounted as high as possible on the rear of the body, and approved tailgate striping.

Large Dump Trucks (Standard or Unibody):

Dual one-bulb rotating beacons or dual flashing LED beacons, two supplemental LED flashing lights on the body-side uprights, two LED flashing “swing” lights (lights that remain horizontal or otherwise can be seen clearly to the rear when dump body is raised) mounted as high as possible on the rear of the body, and approved tailgate striping.

When used for snow and ice control:

Standard Body - two additional LED flashers mounted on the outer edges of the hopper airfoil or high on the outside edges of the hopper if not equipped with an airfoil.

Combination body - two additional LED flashers mounted on the top outer edges of the body.

Excavators/Truck-Mounted Cranes:

Single one-bulb rotating beacon or single flashing LED beacon, two supplemental LED flashing lights mounted as high as possible on the rear of the rear cab. If the turntable extends beyond the sides of the vehicle, two additional one-bulb rotating beacons or dual flashing LED beacons shall be mounted as high and as close to the edges of the turntable (rear cab) as possible, and approved tailgate striping.

Line Striping Machine:

Dual (one front and one rear) one-bulb rotating beacons or dual flashing LED beacons, two supplemental LED flashing lights, and, where possible, approved striping on the rear of the truck body (see section on “*visibility enhancements*”).

Tractors (mowing) / Loaders:

Single one-bulb rotating beacon or flashing LED beacon mounted as high on the machine or cab shield as possible, two supplemental LED flashing lights on the fenders, two LED flashing lights high on the cab or roll-over protective (ROPS) device and, where possible, approved striping on the rear of the machine. Two 24' x 24" orange flags shall be mounted on mowing tractors (see section on “*visibility enhancements*”).

Tower Trucks:

Dual one-bulb rotating beacons or dual flashing LED beacons on the cab roof. Dual one-bulb rotating beacons or dual flashing LED beacons on the rear body cabinet tops. Dual one-bulb rotating beacons or dual flashing LED beacons (that activate when the tower is raised) on the underside of the aerial tower. Two LED flashing lights in the rear and side walls of the body cabinets, two LED flashing lights in the sides of both front truck fenders, and approved tailgate striping.

Bucket (Aerial) Trucks:

Dual one-bulb rotating beacons or dual flashing LED beacons on the cab roof. One one-bulb rotating beacon mounted as high as possible on the rear of the body. Two supplemental LED flashing lights on the rear of the body, and approved tailgate striping.

Motorized Sweepers:

Dual one-bulb rotating beacons or dual flashing LED beacons on the cab roof. Two supplemental LED flashing lights on the rear of the body, and approved tailgate striping.

Other Vehicles and Motorized Equipment (not specified above):

Lighting for all vehicles and motorized equipment not addressed above shall be specified at time of contract or purchase by Office of Fleet Administration & Support with input from Employee Safety & Health and the appropriate user group.

Visibility Enhancements

Light (Arrow) Sticks:

Light (Arrow) Stick – An electronic lighting device, consisting of 8 to 10 rear-facing amber LED lighting cells that flash in several combinations of pre-set patterns, designed to be mounted in the rear window or roof top of an automobile, van or pick-up truck (on the cab protector, between the two beacons, if on a pick-up) .

Cars, vans or pick-up trucks used for emergencies and/or “first responder” vehicles shall be equipped with light (arrow) sticks, primarily to assist in alerting traffic to emergency or unusual situations in or adjacent to a highway.

Use of light (arrow) sticks shall be in accordance with the following:

- Light (arrow) stick-equipped vehicles shall be used in emergency response/first responder situations until emergency is cleared (if situation can be cleared in a brief period of time), or until proper work zone traffic control vehicles and devices can be deployed.
- Light (arrow) sticks shall not be used in any work zone in place of appropriate work zone traffic control devices.
- Light (arrow) sticks shall not be used in place of a required arrow board or arrow panel.
- Light (arrow) sticks may be used as an additional device in a work zone.
- Light (arrow) sticks may be used in advance of emergency conditions and positioned outside of travel lane(s).

Light (Arrow) Stick Flash Patterns

Flash patterns illustrated below are guidance for use in situations noted:

“Flash” (1 and 2 or 3 alternate on and off). Speed can vary, a medium speed is recommended. For use when parked on shoulder or in a properly protected work zone.

□□|□□□□|□□□□|□□□□|□□
3 | 2 | 1 | 2 | 3

“Sequence left or right” (1,2,3,4 and 5 or 5,4,3,2 and 1 are sequentially lighted). Speed can vary, a medium speed is recommended. Use only when in the roadway for a brief (<15 min.) period while clearing an emergency.

□□|□□□□|□□□□|□□□□|□□
1 | 2 | 3 | 4 | 5

“Center” (1,2 and 3 are sequentially lighted). Speed can vary, a medium speed is recommended.

This mode should be used very rarely and only in cases where motorists are being directed to pass on both sides of the DOT vehicle for a very brief period in emergency situations.



Arrowboards:

May be mounted and used on any appropriate vehicle with inspection/approval of Office of Fleet Administration & Support (OFA&S) management. Shall be used in conformance with applicable Manual of Uniform Traffic Control Devices (MUTCD) standards and current Department policy.

Truck-Mounted Variable Message Boards:

Shall be used in conformance with applicable MUTCD standards and current Department policy.

Tape Striping:

Retro-reflective blue, yellow or blue and yellow stripes (3M 580-75 / Scotchlite 680-75 or equal) shall be applied to the rear of all highway work vehicles and equipment where configuration permits. Stripes shall be 8" wide with 2' spacing on large vehicles/equipment and 6" wide with 18" spacing on smaller vehicles/equipment. Stripes shall slope downward to the left at 45 degrees and be configured to maximize the amount of retro-reflective striping.

Alternating red and white retro-reflective body delineation tape striping shall be added to large dump body sides and rear and the back and outer edges of wing plows and stand-off arms.

Orange Flags:

Orange flags (24" x 24") may be placed on corners of vehicles and/or equipment to enhance visibility.

Amber Driving Lights:

Amber driving lights are permissible and may be added when properly installed, they must be operated in conjunction with the vehicles headlights/plow lights. These lights should only be installed where necessary to improve visibility on rural plow beats where the vehicle lighting is the only lighting available.

Installation of these lights will be accomplished by equipment Management. A Maintenance Bulletin with mounting instructions will be available.

WELDING, CUTTING, BRAZING & HEATING

This policy establishes safety procedures for gas and arc welding, cutting, brazing and heating operations based on OSHA Standards 1910 and 1926. Because many of the hazards associated with this type of work are made worse by the location of the operation and types of materials involved, many aspects must be considered when determining appropriate steps to protect employees.

Exposure to Hazardous Airborne Materials

Welding, cutting, brazing and heating operations can pose health hazards. Most hazardous airborne materials are heavy metals found in welding fumes. Metals are present in paint coatings (chromium and lead), in surface coatings such as galvanize stainless steel, aluminum and on paint surface. Very high temperatures that occur during welding, cutting, brazing or heating release these materials in the form of fumes (fine particle smoke). Wherever practical, surfaces shall have coatings removed for at least 4 inches in all directions from the location where the heat or weld will be applied. The backside of the piece shall also be cleaned of coating in the immediate area of the work, if burning this coating will cause hazardous fumes. Removal shall be by means other than burning, i.e. abrasive blasting or grinding. Refer to Abrasive Blasting Safety Bulletin.

Many welding rods also contain additives (flux, for ex.) which can produce hazardous fumes. It is important to review Safety Data Sheets (SDS) to determine if a hazard exists from the welding rod itself.

Respiratory Protection

Employees over exposed to hazardous fumes due to the location of the operation, the material worked on, and/or the rod used, shall use appropriate respiratory protection. Cartridge type respirators shall be supplied with filters designed specifically to protect against contaminants found in welding fumes. Air supplied respirators shall be used where the concentration of materials may exceed the capabilities of filter type respirators. It should be noted that work between two beams beneath a bridge deck requires confined space consideration. Refer to Safety Bulletins on Permit Required Confined Space and section on Compressed Breathing Air and/or contact the Regional Safety and Health Representative for more information.

Respirators shall be regularly cleaned and disinfected. Those used by more than one employee shall be thoroughly cleaned and disinfected after each use. Respirators shall be stored in a convenient, clean, and sanitary location. Respirators used routinely shall be inspected during cleaning. Worn or deteriorated parts shall be replaced. Employees shall be instructed in the use, maintenance, and limitations of the assigned respirator. Respirators found to be damaged or inoperative shall be taken out of service immediately.

Employees required to wear a half or full face cartridge, or a supplied air respirator in the demand mode must be medically cleared and shall be fit tested for the proper face piece. Facial hair, hats, or any other obstruction shall not be allowed to interfere with a proper seal between face and respirator.

Personal Protective Equipment

Employees exposed to hazards created by welding, cutting, brazing, or heating operations shall be protected by personal protective equipment.

Protective Clothing

Fire retardant clothing shall be worn by employees engaged in brazing and/or welding operations.

Hand and Face

For arc operations, the helmets or goggles and gloves shall be made of a material which is an insulator for heat and electricity. Helmets, shields and goggles shall not be readily flammable and shall be capable of withstanding cleaning. Helmets shall be provided that protect face, neck and ears from direct radiant energy from the arc.

Eye Protection

Goggles shall be ventilated to prevent fogging. Lens glass shall be tempered, substantially free from flaws. Lenses shall bear distinctive markings to readily identify source and shade. The following shade chart shall be followed:

OPERATION	ELECTRODE DIAMETER	NUMBER
Shielded Metal-Arc Welding	1/16 inch, 3/32 inch, 1/8 inch, 5/32 inch	10
Gas-Shielded Arc Welding (non-ferrous)	1/16 inch, 3/32 inch, 1/8 inch, 5/32 inch	11
Shielded Metal-Arc Welding	3/16 inch, 7/32 inch, 1/4 inch	12
	5/16 inch, 3/8 inch	14
Carbon Arc Welding		14
Torch Brazing		3 or 4
Light Cutting, up to 6 inches		3 or 4
Medium Cutting, up to 6 inches		4 or 5
Heavy Cutting, 6 inches and over		5 or 6
Gas Welding (light)	1/8 inch	4 or 5
Gas Welding (medium)	1/8 inch to 1/2 inch	5 or 6
Gas Welding (heavy)	1/2 inch and over	6 or 8
Plasma Arc	All	10-14

For gas welding or oxygen cutting that produces a high intensity yellow light, it is desirable to use a filter or lens that absorbs the yellow or sodium line.

Medical

Employees shall receive physician certification that they are physically capable of wearing the type of respirator for their assigned duties. Certification may contain limitations as required for individual employees and have a specified length of time for which the certification is valid (usually one to three years).

Employees exposed to hazardous materials shall also receive periodic medical monitoring required by the specific standards that govern the various materials to which they are exposed (i.e. lead, cadmium).

Ventilation

Indoors - Mechanical ventilation shall be provided for all operations that: are performed in spaces of less than 10,000 cubic feet per welder; **OR** have ceiling height of less than 16 feet; **OR** occur in areas that contain partitions, balconies or other structural barriers which significantly obstruct cross ventilation.

Mechanical ventilation can be 'general' or 'local' in design. General ventilation draws air from the entire work area at a rate of not less than 2,000 cubic feet per minute per welder. Local ventilation (also referred to as point-of-work ventilation) draws air from a location 4 to 6 inches from the welding, cutting or heating operation itself.

Outdoors - Mechanical ventilation is not generally required if there are no obstructions to natural ventilation. If for any reason hazardous materials accumulate in the employees work area, above the permissible exposure level (PEL), local exhaust ventilation is required.

Mechanical ventilation is required for confined spaces, areas of obstructed natural ventilation, or locations where hazardous materials may concentrate. When work involves materials that pose a risk of high exposure to toxic materials, ventilation shall be used or the work shall not be performed.

Hazard Communication

Employees engaged in welding, cutting, brazing, and heating operations shall receive annual hazard communication training, including, but not limited to:

- hazardous materials contained in the coatings or contents of metals.
- availability of Safety Data Sheets for welding rods.
- use and availability of personal protective equipment.

Employees assigned to tasks that may cause lead exposure shall receive training which complies with OSHA Standards 1910.1025(L) and 1926.62(L).

Safe Handling of Welding Equipment

Gas Welding and Cutting - Requirements of OSHA Standards 1910.253 and 1926.350

When transporting, moving and storing compressed gas cylinders, the valve protection cap shall be in place and secured.

All cylinder valves shall be closed when work is finished and before vehicle transport.

When cylinders are hoisted, they shall be secured on a cradle, sling board or pallet, not hoisted or transported with magnets or choker slings.

Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be dropped, struck or permitted to strike each other.

When transported in a vehicle, cylinders shall be secured in a vertical position.

Valve protection shall not be used to lift cylinders.

Unless cylinders are firmly secured on specially designed carriers, regulators shall be removed and valve protection in place before cylinders are moved.

Suitable cylinder truck, chain or other steadying device shall be used to keep cylinders from being knocked over while in use.

When work is finished, when cylinders are empty, or when cylinders are moved, cylinder valves shall be closed.

Cylinders shall be kept far enough away from the actual welding or cutting operation to avoid contact from sparks, hot slag, or flame; or fire resistant shields shall be used.

Cylinders containing oxygen or any fuel gas shall not be taken into confined spaces.

Cylinder valves shall be opened slowly to prevent damage to regulators. Fuel cylinders shall not be opened more than 1 1/2 turns. When a special wrench is required, it shall be left on the stem of the valve while the cylinder is in use so that gas flow can be shut off quickly in an emergency. Before a regulator is removed from a cylinder valve, the cylinder valve shall be closed and gas released from the regulator.

Cylinders that develop leaks in or around the valve stem or fuse plug shall be tagged and removed from service. Caution shall be used in storage of leaking cylinders.

Hoses and connections shall be kept free of grease and oil and inspected for defects before each use. Damaged or defective hoses shall be removed from service.

Torches shall be inspected before each use. Defective torches shall be removed from service.

Torches shall be lighted by friction lighters or other approved devices, not by matches or from hot work.

Regulators and gauges shall be in proper working order.

Back flow prevention devices (flash back arresters) are required. Torches certified by the manufacturer to comply with this requirement are acceptable.

Non-combustible or flameproof screens shall be used to protect employees working in adjacent areas.

Arc Welding and Cutting - Requirements of OSHA Standards 1910.254 and 1926.351
Arc welding and cutting equipment shall be inspected before each use.

All connections shall be checked before each use.

Cables with damaged or exposed conductors shall be replaced.

Cables with splices within 10 feet of the holder shall not be used.

Cables shall be uncoiled to prevent overheating.

Electrode holders not in use shall be stored to prevent electrical contact with persons, conductors, fuel or compressed gas tanks.

Voltage shall not exceed 80 volts for alternating current machines or 100 volts for direct-current machines.

Terminals for welding leads shall be protected to avoid accidental contact by personnel or metal objects.

Welding machines shall be grounded according to manufacturer specifications.

Non-combustible or flameproof screens shall be used to protect employees working in adjacent areas.

Fire Prevention and Protection

Welding or cutting operations conducted in areas which may cause fire hazards require work practices that include fire prevention and protection. Combustible materials within 35 feet of the operation shall be removed. When this is not possible, guards shall be used to confine heat, sparks, and slag.

Never use cutting or welding torches where there is an explosive hazard caused by vapors, liquids or dusts.

Oxygen pressure greater than necessary will cause extra sparks and increase slag flow, and thus increase the potential for a fire.

Oxygen shall not be used to clean equipment or clothing.

Appropriate fire extinguishing equipment and precautions shall be maintained in a state of readiness for instant use to include pails of water, buckets of sand, hose or portable extinguishers depending upon the combustibility and quantity of material exposed.

A fire watch shall be required whenever welding or cutting is performed in locations where major fires could develop, or any of the following conditions exist:

- appreciable combustible material closer than 35 feet to the operation, or extremely combustible material more than 35 feet away, but in the proximate area.
- wall or floor openings within a 35 foot radius which expose combustible material in adjacent areas.
- combustible materials adjacent to the opposite side of metal partitions, walls, ceilings, or roofs likely to be ignited by conduction or radiation.

Fire watch personnel shall have fire extinguishing equipment readily available and be trained in its use. A fire watch shall be maintained for at least one half hour after completion of welding or cutting operations when conditions above exist.

WEST NILE VIRUS

West Nile virus is a mosquito-borne infection that can cause serious illness, and in some cases, death. West Nile virus was first found in New York State in 1999. Since 2000 there have been 490 human cases (37 deaths) of WNV statewide.

The chances of a person becoming ill with WNV are small. Most people who are infected with the West Nile virus will not have any type of illness. It is estimated that 20% of the people who become infected will develop West Nile fever: mild symptoms, including fever, headache, and body aches, occasionally with a skin rash and swollen lymph glands. In many individuals, these symptoms are so mild that they go unnoticed or undetected.

The symptoms of severe infection (West Nile encephalitis or meningitis) can include headache, high fever, neck stiffness, muscle weakness, stupor, disorientation, tremors, convulsions, paralysis, and coma. It is estimated that one in 150 persons infected with the West Nile virus will develop the more severe form of the disease. Prevention of mosquito-bites is the most important way to reduce your risk of mosquito-borne diseases such as WNV.

Precautions

To help protect yourself from mosquitoes and West Nile Virus:

- Wear long sleeves, pants and socks
- Limit exposure at dawn and dusk in wet areas where disease is prevalent.
- Consider using insect repellent

Note: there are many different products on the market, with different ingredients, concentrations and effectiveness. They may contain DEET, permethrin or botanical oils. If you decide to use one, be sure to follow label directions and apply repellent carefully. Repellents can be effective at reducing bites from insects that can transmit disease. But their use is not without risk of health effects, especially if repellents are applied in large amounts or improperly.

If you believe you have West Nile Encephalitis, see a doctor.

WORK CLOTHING GUIDELINES

There are workplace circumstances where employees' safety may be jeopardized, or the potential for hazard increased because of inadequate or inappropriate work clothing. Burns, bruises, cuts, punctures and poison ivy are common injuries caused by inadequate or inappropriate attire on the job. Protection must also be considered for UV rays, and Lyme and blood borne diseases. The single most important criterion for determining adequate and appropriate work clothing is:

WHETHER EMPLOYEE ATTIRE INCREASES INJURY POTENTIAL

If the answer is "YES", then proper work clothing is required and shall be adhered to by employees, supervisors, and managers. Over the course of any work day, conditions and work assignments may change. Emergencies can develop and priorities shift to change a work situation from one which does not require attention to adequate and appropriate attire to one which does, or vice versa. The N.Y.S. Department of Transportation adopts and enforces work clothing guidelines to protect employees. Employees shall, in turn, take steps to protect themselves from injuries which can be prevented by adherence to work clothing guidelines. When there is any doubt regarding the interpretation or application of this policy, first line managers shall decide conservatively and may request advice from Employee Safety & Health.

Policy

The following Department policy addresses adequate and appropriate work clothing for protection of all employees in various work environments and/or assignments. It does not supersede or replace High Visibility Apparel & Hard Hat Policy; Safety Footwear Policy; nor preclude use of other required personal protective equipment, such as gloves, eye and face protection, chaps, etc. necessary to protect against workplace hazards. This policy specifically addresses clothing, footwear, hair length/style, and jewelry.

Employees shall adhere to Department Work Clothing Guidelines as part of their work responsibility, in locations including all Department facilities, construction sites, labs, batch plants, and all areas on the pavement, shoulder or within or outside the right-of-way. This policy applies to all Department personnel who work in or visit such locations, and those not normally affected by this policy who enter areas where adequate and appropriate attire is essential. This policy also applies to non-DOT employees on NYSDOT property.

Guidelines

- Employees working on the highway pavement, shoulder, right-of-way, areas outside the right-of-way, or exposed to caustic or toxic chemicals, extremely hot materials, splashing from hazardous liquids, sparks, flying chips or other materials, abrasives or corrosives, heavy brush, etc., shall not wear apparel which leaves their legs or arms uncovered. Employees shall wear appropriate personal protective equipment such as heat or cut resistant sleeves

- Employees are prohibited from wearing personal garments that do not protect the shoulders, torso, or legs, such as tank tops, sleeveless shirts, altered t-shirts or shorts. This applies to personal garments worn under Department-approved vests.
- Employees working in any location where the potential exists for foot injury shall conform to Department policy regarding safety footwear. Even if considered a “visitor” (as described in the Safety Footwear Policy), employees shall not wear inadequate or inappropriate footwear, such as sneakers, sandals, “clogs”, or “flip-flops” in any location where the potential exists for foot injuries from burns, falling objects, penetration, wheel or track vehicles, machinery, tools, etc.
- Employees working with equipment, machinery and power tools with accessible moving parts shall not:
 - Wear loose fitting clothing (a properly-sized and properly worn vest may not be “loose-fitting”).
 - Wear hair in braids or ponytails, unless secured atop the head.
 - Wear rings, bracelets, necklaces, or earrings which could become entangled.

WORK PLATFORM POLICY

Types of Platforms

Commercially manufactured models shall be the preferred type of work platform. Department manufactured models must be designed and fabricated under the direction of licensed engineer. The Regional Safety and Health Representative shall also review and approve the design prior to fabrication. Equipment Management shall inspect first-time installations of all work platforms on all Department trucks prior to their first use.

All platforms shall have passive fall protection including toe, middle and top rails that comply with the OSHA 1910.28 standard. If this condition can not be met, the employees must be tethered with a harness, and lanyard to an appropriately placed anchor point on the platform closest to the truck.

Platforms can be mounted to the front or rear of a truck. If a front mounted platform is to be used, an impact attenuator should be attached to the rear of that truck whenever possible/available.

Front mounted work platforms **SHALL NOT** be used on undivided two lane highways.

Type of Truck

Platforms shall be mounted primarily on large dump truck. Small dumps/rack truck may also be used if available, but only with the approval of the Regional Transportation Maintenance Engineer.

Permitted Activities

Truck-mounted work platforms shall be used primarily for placing and retrieving devices associated with maintenance and protection of traffic (M&PT), such as cones, barrels and signs. Any other intended use of truck mounted work platforms requires consultation with the Regional Safety & Health Representative and approval by the Regional Transportation Maintenance Engineer.

Operational Methods

Whenever the work platform truck is engaged in approved activities and moving with employees on the platform, that vehicle **shall be** protected by a heavy dump truck shadow vehicle equipped with a truck-mounted impact attenuator (TMIA). **If approved by the Regional Equipment Manager, cone trucks may be equipped with a TMIA. However, a cone truck equipped with a TMIA in no way changes or modifies the requirement to have a shadow vehicle equipped with a TMIA.**

When a rear mounted platform is being used, the truck PTO shall be disengaged.

Employees shall not be permitted to ride in the body or box of any truck at any time while it is moving. Employees may be allowed to ride in an approved work platform on vehicles specifically designed for that purpose, i.e.; wells of cone setting truck, while setting or removing cones.

Radio communication is required between the driver of the work platform truck and the driver of the shadow vehicle. A radio shall also be provided for employees on the work platform. The driver of the truck with the work platform shall maintain visual contact with employees working in front-mounted platforms and shall immediately stop if visual contact is lost.

The driver of the shadow truck shall use extra caution not to drive too close to the work platform truck in case of a rear-end collision, nor too far behind in order to prevent a vehicle from getting between the work platform truck and the shadow truck. For specific guidance on appropriate following distances between these types of vehicles, please see the "Computed Roll-Ahead Distances for Protective Vehicles" in the Work Zone Traffic Control Manual. The manual contains a speed/follow distance table for shadow vehicles in a moving operation as well as for barrier vehicles for stationary operations. The driver of the shadow vehicle should also give consideration to the type of roadway, traffic speed and volume, lane configuration, sight distance, weather/lighting conditions.

WORKING IN PROXIMITY TO WATER

This policy establishes Department policy and procedures for working safely on, near or over water. It is based on Occupational Safety & Health Administration (OSHA) and American National Standards Institute (ANSI) standards for Personal Flotation Devices (PFDs) aka life preservers, Personal Protective Equipment (PPE), fall protection, barges and floating work platforms, skiffs and life saving boat requirements. These procedures and policies have been established to meet regulatory requirements and in recognition of the particular risks associated with working in proximity to water. The procedures shall be carefully reviewed by Program Management in consultation with Employee Safety & Health prior to beginning work.

Definitions

Active (Personal) Fall Arrest System – System used to arrest an employee in a fall from a working level that requires physical activation by that employee to make it effective, consisting of an anchorage point, connectors, body harness and lanyard.

Aerial Lift - A piece of equipment, extendible and/or articulating, designed to position personnel and/or materials in elevated locations.

Competent Person – a person who is capable of identifying existing and predictable hazards in their surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate or limit exposure to the hazard(s).

Controlled Access Zone (CAZ) - Area where a recognized hazard exist requiring demarcation by a competent person through the use of signs, wires, tapes, ropes, chains, or other devices. All protective elements of the CAZ shall be implemented prior to beginning work.

Floating Work Platform - A stable work platform or barge capable of safely supporting workers, equipment, and materials necessary to perform work.

Full Body Harness - ANSI approved personal protective device designed for fall protection, which by reason of its attachment to a lanyard or retractor and safety line or structure will limit a fall to 6' or less.

Lanyard - ANSI approved line designed for supporting one person, with one end fastened to a full body harness, and the other end secured to a safety line or structural member. Lanyards shall not exceed 6' in length, and preferably include a retractable or deceleration device to attenuate fall impact.

Motorized Equipment - Any specialized, motor-driven equipment used in an operation that includes, but is not limited to, aerial lift devices, fork lifts, drill rigs, cranes, excavators, etc.

Passive Fall Protection System - System used to prevent a fall from a working level that does not require immediate action by an employee, such as guardrail, midrail, toe board, shielding or safety nets.

Personal Flotation Device (PFD) - PFDs (life preservers, life jackets, or flotation vests) worn by each affected employee must be United States Coast Guard (USCG) approved pursuant to 46 CFR part 160 (Type I, II, or III PFD) and marked for use as a work vest, for commercial use, or for use on vessels.

Positioning Device - Harness system designed to allow an employee to be supported on an elevated vertical surface, work with both hands free, and limit a free fall to 2' or less.

Qualified Person - a person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

Ring Buoy - a throw-able flotation device 30-inch (0.76 m) in diameter. A USCG approved ring life buoy with a line attached shall be located on each staging and/or readily available on a floating vessel on which work is being performed.

Restraint Device - Harness system designed to keep an employee within a passive fall protection system.

Life Line - A ¾ inch polypropylene line anchored by means of physical attachment capable of withstanding a load in excess of 5000 lbs., and draped in a fashion that the line lays in the water down stream from the work performed/assigned, at a distance that may be reached within 15 seconds notice by the Safety Watch person. The line shall be either yellow or multi colored and shall be maintained free of knots, kinks, or abrasions and/or discoloration caused by Ultra Violet (UV) damage.

Rescue Skiffs - A flat bottomed small craft with one end pointed and a hard transom capable of safely supporting a motorized propulsion device.

Water Rescue Pole - A manufactured pole made for land or boat-based water rescue recovery operations. The rescue pole often prevents water rescue responders from risking their life by entering dangerous fast-moving waters. Water rescue poles are typically designed with a blunt or rounded hook. They may also have buoyant handles and reflective markings.

Safety Equipment

General - All safety equipment and personal protective equipment (PPE) shall meet applicable OSHA and/or ANSI standards, including harnesses, safety lines, nets, and Personal Flotation Devices (PFDs). (Also refer to the Safety Bulletin on Aerial Lift Devices and the Safety Bulletin on Fall Protection).

OSHA refers to body harness devices as personal fall arrest systems in all standards related to fall protection. This term is defined as a system used to stop an employee in a fall from a working level. It consists of a harness, anchorage point, connectors, and lanyard. Because aerial lifts have passive fall protection (bucket or rail system), the intent of the body harness is to keep each occupant in the device upon impact, not to attenuate a fall from it.

Safety equipment (including PPE) shall only be used for employee protection and shall be inspected prior to and periodically during each use. Any personal fall arrest equipment actually subjected to in-service loading (a restrained fall) shall be removed from service and not reused.

All safety equipment showing signs of mildew, broken fibers, deterioration, excessive wear or damage, which could materially affect its strength, shall be removed from service and not reused.

Nets, ropes, harnesses, and lanyards should be kept dry. If they become wet, they shall be thoroughly dried before storing. Storage shall be in a dry location away from caustics, corrosives, or other sources of damage or deterioration.

Rescue Skiffs & Life Saving Boats - Management is responsible for providing suitable rescue equipment for employee working in proximity to water. For many worksites water rescue skiffs are appropriate. However, in fast moving waters, in water with a long distance to shore, in waters with a surf or 'chop' a life saving boat with a rescue sling and winch or raft appropriate for the conditions must be provided.

In all circumstance the Skiff and Life Savings Boats must be appropriate for the intended purpose. Canoes and John boats do not provide sufficient stability and are not recommended for use as a rescue skiff or life saving boat. An inflatable skiff with a rigid bottom and fixed oars is recommended for use as a rescue skiff. Inflatable skiffs can not be swamped, provide a stable platform in most conditions, and afford a greater margin of safety than do canoes and John boats to would be rescuers and victims.

Skiffs should be equipped with a motor having the rating within the manufacture's posted rating. A prop shroud shall be provided for all outboard motors used in rescue. In slow moving waters having a breadth of less than 50 feet oars alone may be appropriately provided.

Nothing in this policy is intended to prohibit the use of specialty designed rescue craft or water rescue devices. Questions regarding the appropriateness of a skiff or life saving boat shall be directed to the Regional Employee Safety and Health Office.

Procedures

Ring Buoys

Whenever work is being done over water or next to the water, ring buoys with at least 90 feet of line must be attached and immediately available. Ring buoys cannot be more than 200 feet apart. A life line should be attached to the ring buoys. (Most ring buoys come with a 'throw bag' with line attached.)

Fall Protection

When employees are working over water they must be protected from falling regardless of the fall distance to the water and regardless of the water depth. Fall protection can be in the form of a guardrail system, a personal fall arrest system, safety shielding, net, or a restraint system. Employees must be continuously protected.

Personal Protective Devices

When active fall protection, a harness, lanyard with anchor point, is required and used **100%** of the time, the use of a PFD is optional. Employees working from a UBIU must be protected from falling with a personal fall arrest system that provides **100%** fall protection all of the time. If the distance between the water surface and the employee is less than the length of the lanyard, the employee shall wear a PFD.

Employees shall not work alone in situations where a drowning hazard exists, if at all possible.

Skiffs & Life Saving Boats

OSHA requires that a life saving skiff and ring buoys be provided for employees who are performing Construction work while working over and adjacent to water where the danger of drowning exists. Working from aerial lift devices including Under Bridge Inspection Units (UBIU) has been determined by NYS Public Employee Safety and Health to be Construction work regardless of what work is actually being performed. Additionally, work on a portable scaffold while it is positioned over water is considered a Construction related activity that requires a skiff or rescue boat.

Work within the confines of a fixed railing system on a bridge would typically not require a skiff.

The Department will strive to provide a skiff/boat to assist in rescue when it is feasible to do so and when their use does not expose our employees to greater hazards. The skiff/life saving boat must be immediately available for rescue. Skiff operators shall be trained in the safe operation of a skiff/boat when used for rescue.

Skiffs and Life Saving Boats are not necessary in the following instances:

- The water is too shallow to navigate a boat.
- Where the geography lacks a safe area to launch a skiff or life saving boat or when the water way presents an immediate hazard to the employee (rescuer) operating the skiff or

- life saving boat, e.g. gorge areas and other sheer launch sites, lock areas and water falls.
- When other effective means of rescue exist; e.g. in shallow areas, with slow moving water that are close to shore such that an employee can immediately wade into the water or utilize the rescue pole to provide rescue.

The use of Life Lines should be considered in areas not suitable for a skiff or life saving boat.

All skiff and life saving boat occupants shall wear a proper fitting PFD, and shall be properly trained to row or to operate a motorized skiff or boat. Operators/occupants of a skiff or boat shall be properly trained to affect rescue, or secure the person to the skiff/boat in the water, or if person can be safely moved to shore to provide first aid, until professional rescue services arrive.

The rescue skiff/boat operator may be assigned to other tasks provided he/she is immediately available to perform a rescue without delay.

Questions regarding the need for a skiff shall be referred to Regional Management in consultation with Employee Safety & Health.

Person in the Water Procedure – See the following addendum.

Barges / Floating Work Platforms

When using motorized equipment (aerial lifts, drill rigs, cranes, etc.) on barges / floating work platforms, a Safety Plan shall be developed to address:

- Competency of operator(s)
- Load rating capacities
- Design consideration to eliminate risk of capsize
- Motorized equipment capabilities / limitations
- Fall protection requirements and other required PPE
- Use of Controlled Access Zone (CAZ) or perimeter guarding
- Method(s) of anchoring equipment
- Lighting (if necessary)
- Access to barge/platform
- Communication devices
- First aid
- Emergency notification
- Conformance to all other appropriate OSHA/ANSI and Department safety requirements

The Safety Plan shall be forwarded to Regional Management and Employee Safety & Health for review prior to the start of work.

Only motorized equipment with manufacturer approval to work on floating vessels shall be used. Equipment shall be positioned as close to the center of the platform or barge as feasible. A CAZ or perimeter guarding shall be in place. Equipment shall be securely

anchored / tethered as required by the manufacturer.

Employees in aerial lifts shall use a full body harness connected to an approved anchorage point. The carrier portion of the aerial lift shall not be moved while occupied unless designed to do so.

A passive rail system is preferred on barges / floating work platforms. Employees walking or working on unguarded decks of barges / floating work platforms shall be protected with proper fitting USCG approved life jacket or buoyant work vest. A PFD is not required when working within an enclosed cab or equipment compartment on a barge or floating work platform.

Work from barges / floating work platforms may necessitate notification of local rescue authorities prior to work beginning.

Floating work platforms shall be designed by a qualified person to eliminate risk of capsizing. The combination of personnel, equipment and materials shall not exceed the load rating capacity or cause risk of capsizing.

Scaffold systems used on barges / floating work platforms shall be securely anchored. A competent person shall be designated to oversee erection, rigging, and securing of scaffold systems. (Refer to Safety Bulletin on Fall Protection regarding proper scaffold construction.)

A Work Sheet for Barge Inspection is available by contacting Main Office Supervising Equipment Operator Instructor.

Working on Ice

Work performed on ice and all equipment moved across or placed on ice shall be done in accordance with established procedures such as those of the U.S. Army Cold Regions Research and Engineering Laboratory. Employee Safety and Health shall be notified prior to any work performed on ice.

The Safety Plan shall be developed and forwarded to Regional Management and Employee Safety & Health for review prior to the start of work.

Training

Training shall be conducted for employees assigned to Boat Operation or Rescue Skiff/Boat Operation on each item in this procedure:

Skiffs and Boats	Part 1 - NYS Safe Boating Course (initial only) Part 2 - Hands on Rescue Training (initial - 3 year refresher recommended) See Basic Training Skills Checklist for Skiff Operators Part 3 – First Aid CPR Training
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Working in proximity to water can involve varied equipment and complicated sites. Training shall be commensurate with the risks and tasks involved.

Related References

Refer to the following Safety Bulletins for additional information:

Fall Protection

Aerial Lift Devices

Rental / Leased and Surplus Equipment

ADDENDUM - PERSON IN WATER PROCEDURES

1. Once inadvertent entry into water is observed immediately shout "Person in Water" to alert others on site to the situation. It is important to keep the victim in sight to assist with rescue. This may involve dismounting apparatus, descending grades and moving along shorelines. Execute the following plan swiftly and use available time wisely to give the victim the greatest chance of a successful outcome.
2. Have one person alert Emergency Services (911) via mobile phone or NYSDOT 2 way radio (relayed through NYSDOT radio operator) and describe in as much detail as possible, the situation. Do not terminate call until the Emergency Services (911) operator instructs you to do so. While the person contacts Emergency Services (911), others on site may be directed to assist in the rescue. Waiting to notify Emergency Service may waste valuable time that the victim may need for a successful outcome. Many Emergency Services are staffed by volunteers who may take some time to assemble and respond especially in rural areas.
3. **Reach-** if the victim is able and is close enough to a stable shore, attempt to guide them to a safe location. When a person is near enough, try to reach them with a rescue pole, ladder, shovel or other long item. Ensure your proper footing before pulling victim to safety. When pulling victim to shore, pull in the same direction of the current flow. If victim is beyond reach: use the throwable ring.
4. **Throw-** From shore or stable area, throw a ring buoy / Type IV Personal Flotation Device attached to a safety rope / line, or other floating object(s) to victim. Throwing some floating objects near the victim will provide them numerous options to assist them with floating and in the event of total submersion, will serve to mark the area where the victim was last seen for professional rescue services to begin search. Ensure proper footing before attempting to pull victim to safety. When pulling victim to shore, pull in the same direction as the current flow. If throwing object(s) is unsuccessful:
5. **Row-** rescue skiff or boat to victim. Assist victim by helping victim hold onto rescue craft or holding their head above water until additional help arrives, using caution not to capsize the rescue vessel. If rescue craft has only 1 operator, tether craft to shore before leaving shore when possible. If tethered, have someone on shore pull rescue craft to safety. If craft has an operator and an occupant(s), the occupant(s) shall render the assistance to the victim and the operator shall have the responsibility to navigate the rescue craft to safety.
6. Once victim is moved to safety, administer appropriate first-aid assistance if trained to do.
7. If victim can not be located, provide Emergency Services (911) an accurate area where the victim was last seen. Water depth and flow characteristics and other potential hazards (ex. submerged trees, nearby downstream waterfall, locks, dams etc.) shall also be noted if known.
8. Notify appropriate NYSDOT supervisory staff

PERSONAL HAZARDS & PROTECTIVE EQUIPMENT

PROPER LIFTING TECHNIQUES

Plan the Move

Decide in advance how to get the job done. Any route taken should be completely free from tripping hazards. Determine if and how much help will be needed and where the object will be set down.

Look over the object to see how to hold it. Remove any grease and oil from the object or hands. The distance the object is to be moved should be carefully considered and rest stops planned if necessary. Always allow enough space to maneuver the object. Things not meant to be moved by hand should be moved by mechanical lifting devices.

How to Lift and Carry

The natural lifting method consists of bending the knees, using the legs to take the weight of the lift, and allowing the back to assume a comfortable angle, natural for the person lifting and the load.

The following steps outline proper lifting technique:

- ESTABLISH GOOD FOOTING.
- BE CERTAIN THERE ARE NO TRIPPING HAZARDS.
- PLACE FEET SHOULDER-WIDTH APART, ONE FOOT SLIGHTLY AHEAD OF THE OTHER.
- BEND AT THE KNEES TO GRASP THE WEIGHT.
- KEEP THE BACK STRAIGHT AS POSSIBLE, BUT AT A COMFORTABLE ANGLE.
- GET A FIRM GRIP ON THE OBJECT.
- LIFT GRADUALLY BY STRAIGHTENING THE LEGS - DON'T JERK THE LOAD. SUDDEN MOVEMENT, TWISTING OR TURNING CAN CAUSE INJURY.
- GET HELP WHEN THE WEIGHT IS TOO HEAVY, BULKY, OR AWKWARD.

When carrying objects, the load must be kept close to the body to take full advantage of its mechanical leverage. Vision should always be clear. If the load interferes with normal walking, get help. If direction has to be changed, it should be done by moving the feet instead of twisting the body. Don't change the grip on the load unless its weight is temporarily supported.

To lower a load, knees should be bent, back straight, and the weight kept close to the body. Ample resting space for the load must be allowed to avoid injury to fingers or toes. Loads set on benches or tables should be first placed on the edge and then pushed forward with arms or body.

When pushing or pulling, the body's weight and leg muscles should do the work to keep strain off the back. Get a good grip on the object and keep the back as straight as possible. Feet should be braced for maximum leg power and legs bent to use body weight to move the object.

Odd shaped objects require special handling, perhaps special equipment and/or additional personnel. When lifting or carrying with another, teamwork is important. The load should be equally distributed and movements coordinated so that all involved start and finish lifting and turn at the same time.

Personal protective equipment must not be ignored when lifting or carrying objects. Safety footwear prevent injuries from dropped objects. Gloves protect against slivers, cuts, and burns.

LEAD

Lead is a soft bluish-gray metal with properties that make it a desirable building material and additive for paint. Paints containing lead are resistant to corrosion and provide a durable surface which does not crack with temperature variations. Lead base paints are found on bridges, vehicles, construction equipment, and in pavement markings, and were traditionally used in interior and exterior building applications. Manufacturers have made substantial progress in removing lead from paint. The Department fleet has been painted with non lead base paint since 1987.

Lead can enter the body by inhalation or ingestion. When materials containing lead are heated, lead is released as a fume which can be inhaled. Poor hygiene practices can introduce lead into the body when eating, drinking, and smoking. Lead can adversely affect many parts of the body. Most common are the circulatory, nervous and reproductive systems. Common symptoms of lead poisoning include sore joints, fatigue, high blood pressure, irritability, tremors and stomach pain.

Policy

Employees who have potential for overexposure to lead shall be protected by engineering and/or administrative controls, or shall use appropriate respiratory protection.

Regulations

Lead is addressed by OSHA regulations 29 CFR 1910.1025 (General Industry) and 29 CFR 1926.62 (Construction Industry). Department employees who work on motor vehicles and equipment are covered under General Industry. Those who demolish, construct, alter, repair or renovate structures are covered under Construction Industry. The two standards, though similar, have subtle differences. The following requirements are set forth for both:

- The permissible exposure limit (PEL) is 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) as an 8 hour time weighted average (TWA). The action level is 35 $\mu\text{g}/\text{m}^3$. Action level is the level of exposure at which the employer must take positive steps to comply

with OSHA requirements.

- Locations/operations that expose employees to lead **at or above the PEL for more than 30 days per year** require engineering or administrative controls to reduce and maintain employee exposure below the PEL. Engineering controls are, for example, local ventilation, changes in work methods, and use of alternative materials. Administrative controls are steps such as limiting time of exposure and/or number of employees exposed. If these controls do not reduce employee exposure to less than 50 ug/m³, personal protective equipment shall be used. The Construction Standard does not have a 30 day per year stipulation. Employees who fall under CFR 1926, and who have potential for exposure at or above the action level of 35 ug/m³, shall be protected by engineering and administrative controls, and use respiratory protection.
- For employees covered under General Industry, and who are exposed to lead **above the PEL for 30 days or less per year**, the Department shall initially use engineering controls to reduce exposure to 200 ug/m³ (TWA), but thereafter shall implement some combination of engineering, administration and respiratory controls to maintain employee exposure at or below 50 ug/m³.
- The Department shall maintain and follow a written program to reduce exposure to or below the PEL. The written plan shall provide a description of each operation in which lead is emitted, including machines/equipment used, materials involved, controls in place, employees exposed and their duties, and operating and maintenance procedures.
- Where respirators are required to limit employee exposure to lead, the Department shall supply the proper respirators, and provide employees a physical examination to determine respiratory fitness. Employees using cartridge type respirators shall be "fit" tested. Employees issued respirators shall be trained in their use, maintenance, and limitations.
- Work environments shall be maintained as free as practicable of accumulations of lead. Floors and other surfaces shall not be cleaned with compressed air. Shoveling, sweeping, and brushing shall only be used where preferred methods (i.e. wet washing) are not practical.
- The Department shall train employees with possible exposure to lead regarding health hazards, and supply copies of appropriate OSHA Standards.
- Eating, drinking, or smoking shall not be allowed in areas where lead contamination exists. Employees shall not enter designated eating areas with protective clothing and equipment, unless surface lead dust has been removed.

Medical Monitoring

Employees covered under General Industry who are engaged in abrasive blasting, grinding, welding, cutting and brazing on materials containing or coated with lead, and who may be exposed **at or above the action level (35ug/m³) for more than 30 days per year** shall enter a medical monitoring program. For employees covered under Construction Industry, who have **any exposure at or above the action level**, the Department shall offer initial medical surveillance.

Medical monitoring requires that blood lead and zinc protoporphyrin (ZPP) levels be determined every six months. An employee with a blood lead level of 40ug/100g (micrograms per 100 grams) of whole blood shall be tested at least every other month until two consecutive blood samples indicate blood lead levels below 40ug/100g. An employee with a blood lead level exceeding 40ug/100g must be notified in writing within 5 working days of the test. An employee with a blood lead level at or above 50ug/100g, and the previous test was 40ug/100g or above, shall be removed from lead exposure until their blood lead level returns to 40ug/100g. The Department shall offer annual medical examination to employees with blood lead levels at or above 40ug/100g.

Exposure above the Permissible Exposure Limit (Overexposure) The Department shall supply protective apparel at least weekly to employees exposed to lead **above the PEL**, and daily for exposure to lead over 200ug/m³ (TWA). The Department shall collect contaminated apparel in a closed container, and shall inform in writing any person who launders non-disposable apparel of the potential harmful effects of lead. Hygiene facilities (changing rooms and showers) shall be provided where employees are overexposed. The changing room shall be equipped with separate storage facilities for protective apparel and equipment, and for street clothes. Employees shall not leave work wearing protective clothing or equipment.

Warning signs shall be posted in overexposure conditions.

COMPRESSED BREATHING AIR (Air Supplied Respirators)

The following governs use of compressed breathing air systems. Information applies to all supplied-air respirators and hoods, demand flow respirators, and self-contained breathing systems. Typical applications include sandblasting, welding, protection from dangerous fumes and materials such as asbestos, lead and galvanize, and other tasks where air purification respirators are impractical due to the types of airborne contaminants or concentration.

Types of Compressed Breathing Air Systems

Constant Flow - air passed continuously through the respirator to minimize leakage and entry of external contaminants into the respirator, to ventilate the respirator, and to provide Grade D breathing air.

Demand Flow - air supplied to the respirator only as the wearer inhales or demands air. Air

flow adjusts automatically to breathing rates. This system is used for short duration work and usually supplied by compressed air cylinders, or an on-line compressor.

Pressure-Demand - positive pressure is maintained in the respirator at all times by providing constant air flow, with increased air flow upon inhalation. It requires a tight fitting respirator and is supplied by an on-line compressor or compressed air cylinder.

Two Requirements For All Compressed Breathing Air Systems

Protect employees from the specific hazards in a work environment or associated with a specific task.

Supply air that meets or exceeds OSHA air purity standards as follows:

Grade D Air *

<u>Contaminant</u>	<u>Maximum Parts Per Million</u>
Carbon Monoxide	20
Carbon Dioxide	1,000
Oil	5

* Compressed Gas Association commodity specification G-7.1-1966

Common Compressed Air Contaminants

Carbon Monoxide - The most toxic contaminant in compressed air. It enters the breathing air system through the air intake, or is produced by overheating of piston type compressors. The air intake must be placed away from engine exhaust or other sources of carbon monoxide.

Water/Water Vapor - Air contains moisture which is drawn into the compressor and enters the air stream as a vapor. As compressed air flows through the system, it cools, causing the vapor to condense in the face piece or helmet. Moisture combines with oil and solid contaminants to form sludge, which can clog or damage system components. Water also causes rust in pipelines, and can freeze in cold weather to block air flow.

Oil/Oil Mist - Oil is a major contaminant in systems using lubricated compressors. In reciprocating compressors, lubricating oil applied to cylinders causes small droplets by the shearing action of the piston to enter the air system as a mist. Oil mist can cause breathing discomfort, nausea and pneumonia, and create unpleasant taste and odors. Centrifugal compressors produce no oil.

Solids - Generally enter the system through the air intake. However, some materials may be introduced by the compressor itself. In non-lubricated compressors, teflon, carbon and other materials are used as lubricants. Frictional wear can cause particles from these materials to

enter the air stream.

System Components

Air Intake - Air must be taken from an area free of contamination, especially exhaust fumes. The compressor must always be located upwind of work area contamination. The air intake pipe should be made of noncorrosive materials, and a valve installed at the base of the pipe to prevent build-up of condensed moisture.

If indoors, the air intake should be kept away from areas of high temperature, low air circulation, areas where solvents are used or stored, where heaters or combustion equipment is used, or where carbon monoxide is likely to accumulate.

Air Compressor - A compressor used to supply breathing air must be capable of delivering the volume of air required for the type of respirator. A centrifugal type compressor should be used wherever possible. The compressor should be operated at the lowest possible temperature. Only the type and quality of lubricant recommended by the manufacturer should be used. If an oil lubricated compressor is used, it shall have a high temperature or carbon monoxide alarm, or both. Compressor and filters must be inspected daily, and filters replaced when dirt appears on the output side of the filter.

Pressure Regulator - A control valve to assure that air pressure to the respirator does not exceed a preset limit. Pressure at the inlet to the breathing air lines should be no higher than the respirator manufacturer's recommendations.

Breathing Air Lines - Usually 1/2 to 3/8 inch diameter, and made of materials which do not give off objectionable taste and odor. Maximum permissible length of line is 300 feet, unless the respirator manufacturer specifies a different maximum length.

Personal Respirator - Type of respirator or hood used depends on the hazard. It should be fitted to the employee, meet NIOSH standards, and be compatible to the compressed air system.

Air Purification System - Compressed breathing air systems may be supplemented with a purifier to remove common contaminants from compressed breathing air. A purification system is designed to:

- filter out oil, liquid, water and solids
- reduce water vapor content
- convert carbon monoxide to carbon dioxide
- filter out undesirable taste and odor

An after-cooler may be used in conjunction with the purifier to keep inlet air temperature between 65°F and 100°F. A drain valve is necessary for removal of condensation. A tank receiver must be used downstream of the after-cooler. In the event of malfunction, the tank offers a reservoir of clean air to the respirator. Receivers should be equipped with drain valves to remove condensation.

Precautions

A visual pre-operational check of the compressor will detect any defects. The muffler and exhaust system must be examined for deterioration and, if needed, replaced before the compressor is used to supply breathing air; and periodically checked during daily use for any defect that may be developing. If a defect is detected, the operation must be discontinued.

Select a safe location for placement of the compressor. The compressor should not be operated near other operating equipment or idling vehicles. Gas engines emit carbon monoxide. Diesel engines emit sulfur dioxide (noxious fumes) and oxides of nitrogen. All can severely affect breathable air.

Air received through the compressed air system comes from the compressor air intake. If contaminants are present in the system, it is because of mechanical deficiency, or not following necessary precautions.

A respirator fit test, and medical certification must be obtained before an employee is assigned a task requiring a respirator.

Employees must be trained in compressed breathing air systems.

After use, respirators are to be cleaned and stored away from contamination, caustics, dust, sunlight, excessive heat or cold, and moisture. Respirators used by more than one employee must be cleaned and disinfected after each use.

In-line heaters and coolers shall not be used until it is determined that the compressor is capable of delivering adequate air for safe operation.

Oxygen must never be used to supply breathing air.

Stencils will be conspicuously posted on all compressors stating:

(For gasoline powered compressors, a red on white sticker stating) "THIS GASOLINE POWERED COMPRESSOR WILL NOT BE USED FOR BREATHING AIR SUPPLY UNDER ANY CIRCUMSTANCES".

(For diesel powered compressors a black on yellow sticker stating) "THIS DIESEL POWERED COMPRESSOR CAN BE USED FOR BREATHING AIR SUPPLY WHEN USED IN-LINE WITH AN AIR PURIFICATION SYSTEM AND CARBON MONOXIDE ALARM IN ACCORD WITH OSHA REGULATIONS AND A PERSON TRAINED IN PURIFICATION SYSTEM OPERATION IS AT THE JOB SITE".

Pneumatic and Electric Powered Air Pumps

Light sandblasting, such as on equipment for repainting, will require only the use of a pneumatic or electric powered air purification system. The most critical safety concern with these systems is location of the air intake. No source of carbon monoxide shall be allowed anywhere near the air intake.

POISONOUS PLANTS

While poison ivy is active all year, contact is more likely to occur in spring and summer.

Description - All varieties have three leaves, and can be smooth or toothed, hairless or hairy, glossy or dull. It can grow as a vine or shrub, and survive almost anywhere. Berries are hard, white and small, and droop in clusters.

Reaction - May take four hours to three days. Affected skin reddens and breaks into bumps and blisters, which begin to ooze. The clear liquid from open blisters will not spread the rash or cause others to get poison ivy. The harmful chemical in poison ivy is urushiol. If not completely washed off skin and clothes, poison ivy may spread.

Treatment - Wash affected areas thoroughly with soap and water as soon as possible. When blistering begins, apply wet boric acid or table salt and water (a teaspoon to a pint of water). Calamine lotion is effective. When the blisters break and skin begins to scale, any cooling ointment will help.

Prevention - After contact, nothing can be done to prevent getting a rash. Contact is not necessary to get it. Urushiol can be carried in smoke caused when poison ivy plants are burned, or carried in contaminated clothing. Risk of poison ivy can be minimized. Injections are available through a physician. The surest way is to avoid contact.

- Wear clothes that cover arms and legs.
- Wash skin and clothing thoroughly immediately after exposure.
- Know what it looks like, and avoid it
- Herbicide application several weeks before work begins.

RADIATION EXPOSURE

Employees using nuclear density gauges who may be concerned about radiation exposure should refer employee to Employee Safety and Health.

WORKING IN HOT WEATHER

This section is intended to provide information and guidance for working in hot weather.

Common sense and reasonable work practices described in the following can minimize the effects. Four (4) environmental factors can affect working in hot weather: temperature, humidity, radiant heat from the sun, and air movement. Also important are personal characteristics such as age, weight, fitness, medical condition, and acclimatization (getting used to high heat).

The body reacts to high external temperature by circulating blood to the skin, increasing skin temperature. This allows the body to give off excess heat through the skin. However, when muscles are being used for physical labor, less blood is available to flow to the skin and release heat. Sweating also helps maintain stable internal body temperature, but is effective only if humidity is low enough to permit evaporation, and if lost fluids and salts are replaced.

Heat Disorders

Heat rash, also known as "prickly heat", may occur when sweat does not evaporate from the surface of the skin. Serious heat rash can inhibit sleep and impede performance, and result in temporary disability. It can be prevented by resting in a cool place and allowing skin to dry.

Fainting may be a problem for an individual not acclimatized to a hot environment, who remains still in the heat. Movement reduces possibility of fainting. Seek medical attention if fainting occurs.

Heat cramps are painful muscle spasms from drinking large quantities of water without replacing lost body salt. Tired muscles are usually most susceptible to cramps. Cramps may occur during or after exertion and may be relieved by drinking liquids. More serious cases require medical attention.

Heat exhaustion results from loss of fluid through sweating and failure to drink enough fluids, and/or take in enough salt. An individual with heat exhaustion experiences extreme fatigue, giddiness, nausea, or headache. Skin is clammy and moist, complexion pale or flushed, and body temperature normal or slightly higher. Treatment is usually simple: rest in a cool place and drink water or, if available, an electrolyte solution to quickly restore potassium, calcium, and magnesium salts. Severe cases of vomiting or loss of consciousness require medical attention.

Heat stroke is caused by failure of the body's internal mechanism to regulate its core temperature. Sweating stops and the body can no longer rid itself of excess heat. Signs include (1) mental confusion, delirium, loss of consciousness, convulsions or coma; (2) body temperature of 106 degrees F or higher; and (3) hot dry skin which may be red, spotted, or bluish. **Medical attention must be sought immediately.** While awaiting medical help, move the victim to a cool area, apply water with a cloth or sponge, and fan vigorously to increase cooling. Prompt first aid can prevent permanent injury.

Protection from Heat

Most heat-related health problems can be prevented, or risk of developing them reduced, by following basic precautions to lessen the effect of heat on the body.

Work practices - - - shielding from the sun (umbrellas on rollers, for example); use of power tools to reduce exertion; and personal cooling devices or protective clothing can reduce the hazards of high heat. Provide ample drinking water -- as much as a quart per hour can help reduce risk of heat disorder. Heavier work can be scheduled during cooler periods.

Ample rest in a cool area can help avoid heat-related symptoms.

Acclimatization to heat through initial short exposures, followed by longer periods of work in hot weather, can minimize heat impact.

Awareness is vital. Replace fluids and salt lost; recognize symptoms; and monitor water weight loss to guard against dehydration. Older, overweight individuals, and those on certain medications, are at greater risk.

OSHA does not specifically address heat exposure. However, heat disorders are considered a serious hazard, and protection is afforded under OSHA's **General Duty Clause**.

VEHICLE & EQUIPMENT OPERATION

VEHICLE AND TRAFFIC LAW

Operators shall observe all vehicle and traffic laws of New York State. Vehicles shall not be driven over the legal speed limit, nor above the speed warranted by weather or conditions. Operators are responsible for the operation and condition of their vehicle, including ensuring that all running, flashing, and signal lights are operating properly, that lenses and reflectors are clean and unbroken, and license plates are clean.

OPERATOR LICENSE

Every employee who operates a vehicle or piece of equipment requiring a NYS Department of Motor Vehicle driver's license shall have the appropriate license, current and in effect, for the vehicle/equipment, at the time of operation. An employee who loses that license (expiration, suspension or revocation) must immediately notify his or her immediate supervisor, and discontinue operation of the vehicle/equipment.

Managers shall check each operator's license at least once a year and perform any other administrative check deemed appropriate. This includes a search of Department of Motor Vehicle records.

OPERATOR TRAINING

Before an employee uses a piece of equipment that he/she has not operated within the last six (6) months, his/her supervisor or an Equipment Operator Instructor will personally supervise a review of the controls and insure the operator has had reasonable time to work the controls in a practice situation.

DRUG AND ALCOHOL TESTING

The Omnibus Transportation Employee Testing Act (OTETA) mandates alcohol and drug testing of employees in positions requiring a Commercial Drivers License and those defined as safety sensitive. Pre-employment/pre-duty drug testing, and alcohol and drug testing for reasonable suspicion, post-accident, random, return-to-duty and follow-up testing are components of this program. Refer to Office of Human Resources' OTETA Drug & Alcohol Testing Policy or contact your Regional Safety & Health Representative.

TRANSPORTATION OF PERSONNEL

Employees shall not ride in areas other than those specifically intended for passengers. Passengers shall not exceed the number which can be legally seated. All occupants shall wear seat belts. Tools and equipment shall not be transported in the same area with personnel. Flammables shall not be transported in the passenger area.

PLACARDING

It is the intention of Transportation Maintenance to placard any DOT vehicle transporting hazardous materials in sufficient quantities to be regulated by Federal CFR Title 49. Although NYSDOT is exempt from such regulations, it will adhere to Federal Standards. Shipping papers or a manifest are also required.

Based on current operations, Transportation Maintenance does not transport any hazardous materials which meet the quantity limits of CFR title 49. Therefore, no placarding is needed.

- Gasoline is no longer transported in cargo tanks which have a 1000 lb. limit. Gas can only be transported in approved 5 gallon gas cans with a limit of four (4) cans per vehicle.
- Transportation Maintenance does not transport quantities of propane (1000 lbs.) to meet placarding regulations.
- Pavement marking and herbicide operations do not involve hazardous materials.

If future operations meet the quantity limits of a hazardous material, placarding will be required. Never placard when it is not necessary.

Definitions

Hazardous material - material capable of posing unreasonable risk of health, safety and property when transported.

Categories of hazardous materials are explosives, gases, flammable liquids, flammable solids, oxidizers, organic peroxides, poisons, radioactive materials, corrosives, and other regulated materials.

Placard - 10 and 3/4 inch diamond shaped label applied to both ends and both sides of a vehicle to indicate the presence of hazardous materials. The proper placard is determined by the hazard class of the product. The placard must state the identification number of the hazardous material.

FUELING VEHICLES AND EQUIPMENT

Smoking is prohibited within 50 feet of fueling operations. Vehicles being fueled must have their ignition off, and must be attended at all times during fueling.

MOUNTING AND DISMOUNTING VEHICLES

Check bottoms of shoes for grease or oil, snow and ice in winter, before mounting. During winter weather, clear vehicle steps of snow and ice before climbing. Anticipate climb into the cab. Starting on the wrong foot will lead to an awkward position at the top step. Use hand holds or grab rails to support entry or dismount. Back out of the cab to dismount retracing entry steps. Do not jump from the cab or other part of the vehicle where steps, ladder, and hand holds are provided.

MEDIAN CROSSOVER POLICY

Operators should avoid using median crossovers and U-turn areas whenever possible.

However, many U-turns are required to be plowed for emergency vehicles use and are the normal turnaround location for snow and ice beats. Generally prior to the U-turn area, a deceleration lane has been made available for safer access. The truck **must** not encroach upon traffic with either the front or rear of the truck. It is best to check all crossovers for proper width with a fully dressed truck prior to the winter season in good weather.

Operators **must** use reasonable judgment and in most cases proceed to a ramp, interchange or adequate parking lot where a safe turn can be made. Weather conditions and traffic volume should be considered before making the decision to proceed thru the U-turn area.

Residency management shall review “beats” each year to ensure that safe turn-arounds are located and used.

DISABLED VEHICLES

If a vehicle becomes disabled, it should be parked as far off the pavement as possible. Turn on flashers. If available, reflective warning devices or other emergency warning devices should be placed at least 100' to the rear to warn approaching traffic. Where sight distance is limited, a warning should be placed as far as 300' from the vehicle. It may become necessary, especially if the vehicle is disabled on the pavement, to flag approaching traffic away from the disabled vehicle.

When a vehicle lighting system does not meet the following minimum operating conditions, it will be considered disabled, and not operated on the highway until lights are repaired, or the vehicle is followed by another Department vehicle with flashers and warning lights.

- During daylight hours, at least one front and rear directional on each side, and any combination of two stop lights.
- From dusk till dawn, at least the same for daytime, plus any combination of two headlights, one on each side.

EMERGENCY REPAIRS

Never make repairs, change a tire, etc. unless qualified. Always set the parking brake, and use flashers and other warning devices to increase visibility. If another employee is available, he or she should spot traffic, perhaps flag, to caution oncoming traffic and alert the employee making the repairs of an approaching vehicle.

The operator of a parked vehicle along the highway should avoid getting out on the driver side. When it is not possible to exit on the shoulder, check carefully for oncoming traffic, then make the exit as fast as possible. Close the door on the traffic side.

SAFE STOPPING DISTANCES

Maintain proper distance between vehicles, generally one vehicle length for every 10 MPH under normal driving conditions. Good judgment must be used because of the many factors that determine safe stopping distance: road conditions, weather, glare, speed, vehicle load, traffic volume, temperature effect on tires and pavement.

VEHICLE STOPPING DISTANCE

Speed (mph)	Driver Reaction Distance (feet)	+	Vehicle Braking Distance (feet)	=	Total Stopping Distance (feet)
15	17		14		31
20	22		26		48
25	28		39		67
30	33		55		88
35	39		78		117
40	44		106		150
45	50		136		186
50	55		188		243
55	61		230		291

Stopping distances based on average driver reaction of 3/4 of a second to begin braking on dry pavement. Slower reaction time or delayed recognition of danger further decrease the safety margin.

EFFECT OF ADVERSE CONDITIONS ON STOPPING DISTANCES IN FEET

			(MPH)		
	20	30	40	50	60
<u>Road Condition</u>			(FEET)		
Dry Concrete	47	88	149	243	366
Gravel	70	135	232	374	561
Wet Pavement	78	147	252	404	607
Packed Snow	105	194	336	541	808
Ice or Sleet	235	430	745	1,215	1,830

CONSTRUCTION EQUIPMENT OPERATION

Know the Equipment - Operators must be trained in operation and operator maintenance.

Know and observe equipment safety rules.

Wear Proper Clothing - Wear relatively close-fitting clothing. Loose jackets, shirt sleeves, rings and other jewelry, and unconfined long hair can catch in moving parts or controls. Wear required personal protection, such as hard hats, safety glasses, and hearing protection. Refer to manual sections on Work Clothing Guidelines, High Visibility Apparel and Hard Hats, Eye & Face Protection, Hearing Protection and Safety Footwear.

Know the Terrain - Learn as much about the working area as possible. Watch for overhead and underground utilities.

Check Signals - Some operations require the use of a signal person. Make sure everyone is using the same signals.

Check Equipment - Before starting equipment at the beginning of each day, make a walk-around safety check. Look for loose bolts and pins, oil or coolant leaks, and wear or damage to moving parts. Check condition of instruments and gauges, operating controls, lights and safety equipment. Vehicles requiring a CDL also require a post-operation check.

Clean Equipment - Keep equipment clean, including windows, lights and mirrors. For safe mounting, clean steps, grab rails and shoes. Be sure foot pedals are clean and dry.

After Starting - Test equipment before moving. Make sure steering and brake systems are operating properly. Check controls for direction of travel and sound the horn before moving. Check gauges frequently during operation.

Watch for Others - Know the working range of equipment. Be sure everyone is clear before swinging or moving.

Electrical Safety - Be extremely careful around energized lines or equipment. Be sure of clearances. Contact the local utility when in doubt. Do not operate equipment within 10 ft.

Refueling - Never: refuel equipment with engine running, leave equipment while being fueled, or smoke while refueling equipment.

Equipment Shutdown - Select dry, level ground for parking. Do not park on a slope. Park a reasonable distance from other machines. Equipment parked overnight should be a safe distance from the pavement. Lower hydraulic attachments to the ground, and set parking brake. Chock the unit when in doubt. Be sure machine is in a safe condition to leave. Lock operator compartment. Take the key.

Cranes

To inspect and repair the boom, it shall be lowered and placed on adequate supports. Always shut down the unit to clean, repair or lubricate.

All defects shall be reported and repaired before operating. "Casual" welding will not be performed to correct structural boom damage. All boom welding shall be done in accordance with ANSI standards by a certified welder.

All exposed gears, belts, sprocket drums, sheaves, shaft ends, etc. shall be guarded.

Know the machine, its capabilities and capacities. Know the weight of the load to be lifted as well as the lifting capacity of the crane. Crane capacities shall be posted on the machine. The operator shall remain at the controls when the unit is running and when a load is suspended.

Check terrain. Be sure footing is firm. Use adequate blocking. Always use outriggers. Be sure the unit is level. Work from the back of a truck crane, not the side.

Be alert to other employees. Do not allow anyone under the swing area, unless they are guiding the load. Do not allow other employees to come in contact with the crane when it is working. All employees in the area shall wear a hard hat.

Check for overhead electrical wires and equipment. Assume they are energized until confirmed by the utility. Do not allow any portion of the unit within 10 ft. of the electrical source.

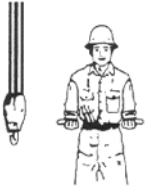

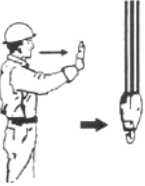
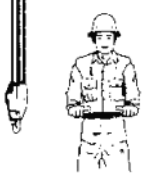







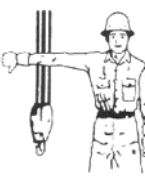
All clearances shall be checked carefully, before moving any part of the crane.

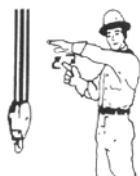
Cranes shall not be used as a "manlift".

Hoisting more than one load at a time is prohibited. Unbalanced loads shall not be hoisted. Loads shall be hoisted and swung with boom in as vertical a position as possible. Swing shall be smooth and gradual. Rapid swing will affect stability.

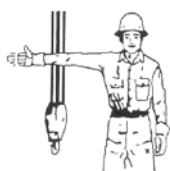
Proper hand signals shall be discussed, agreed upon, and used by the employee directing crane movement and the operator, especially where operator vision is obstructed. (See next page for signals).

STANDARD HAND SIGNALS FOR CRANE OPERATION

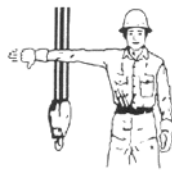
 <p>EXTEND BOOM</p>	 <p>DOG EVERYTHING</p>	 <p>TRAVEL</p>	 <p>RETRACT BOOM</p>
 <p>EXTEND BOOM (ONE HAND)</p>	 <p>RETRACT BOOM (ONE HAND)</p>	 <p>HOIST</p>	 <p>LOWER</p>
 <p>USE MAIN HOIST</p>	 <p>USE WHIP LINE</p>	 <p>RAISE BOOM</p>	 <p>LOWER BOOM</p>



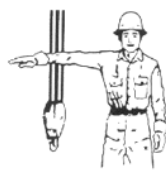
MOVE SLOWLY



**RAISE THE BOOM &
LOWER THE LOAD**



**LOWER THE BOOM &
RAISE THE LOAD**



SWING



STOP



EMERGENCY STOP

Excavators

Before working near buried utility lines, contact the appropriate "one-call" (call before you dig) provider to determine exact locations. Slow the machine operating speed to increase reaction time and use a signal person when working near buried utility lines.

Keep machine well back from the edge of an excavation and avoid undercutting the machine. Provide adequate clearance for tail swing; barricade the area to prevent entry. Never operate the excavating unit while others are in the "swing area". Operating on a slope is dangerous, level off a work area if possible. If it is necessary to work on a slope, slow the work cycle and avoid reaching too far downhill.

Do not load a truck until the operator is out of the cab, then load from the rear or side of the truck. Load evenly, do not drop material from unnecessary heights. Don't overload.

Protect the "swing area" completely around the unit from contact with other vehicles, equipment, and pedestrians.

Loaders

Use the seat belt. Do not mount or dismount a moving vehicle. Do not let anyone stand or ride on the machine.

Follow all Department backing rules.

When loading, keep machine on level ground. For dumping, keep wind to your back if possible. Do not hit the truck with the loader or bucket.

Do not overload. Do not start or stop quickly.

The bucket shall not be used as a work platform.

When traveling, maintain speed slow enough to allow complete control at all times. Carry bucket or attachment low so it doesn't block operator vision or affect the unit's center of gravity. Stay clear of edge of banks or pits.

No one should place themselves in the "hinge area" of an articulated machine while the engine is running, or when someone else could operate the machine. Lockout/tagout procedures shall be followed.

Rollers

Remain in the operator's station. Do not mount or dismount a moving machine. Employees shall not ride on the roller. Maintain control at all times. Do not operate roller at a speed

imprudent for conditions. If the machine gets close to a tipping condition, STOP and get off after applying the parking brake. Check for overhead obstacles.

Rolling Shoulders

If shoulders are widened on a project, a uniform shoulder width should be maintained. This may require extending culverts. When shoulders are widened, appropriate width embankments, properly compacted, shall be constructed.

In situations where it is not possible to widen shoulders as indicated above, or where shoulder maintenance activities are only adding material to existing shoulders, and narrow sections of shoulders are encountered, the following procedures shall be observed.

- In cases of steep slopes and/or narrow width, determinations shall be made as to whether shoulders can be rolled safely using conventional methods. If conventional rolling is not possible, then vibrating tampers or some alternate means of compaction shall be used.
- Demarcate and physically barricade areas where the shoulder is not wide enough to utilize conventional rollers. Use tall stakes and survey marking tape. This shall be done immediately prior to compaction.
- Where shoulder width and/or stability is a concern or where there is a steep slope adjacent to the shoulder, rolling shall only be done with the roller proceeding forward. All backing shall be done on the pavement, not on the shoulder.
- When it is necessary to back on the pavement, work zone protection and traffic control shall be established to allow for backing without interference from traffic. The travel lane adjacent to the shoulder shall be taken out of service, and properly signed and otherwise protected.

TOWING EQUIPMENT

Employees shall not ride on any trailer or towed equipment not designed to carry an operator or passenger(s). The only exception to this policy is when an operator must ride on a straw mulcher, hydro seeder or similar equipment while completing this task. This exception will only be allowed when:

- A1. The equipment is designed and manufactured with a safe operating position (seat and seatbelt) for such use.
~ or ~
- A2. An in house manufactured or assembled unit that is designed and built with a safety railing system consisting of a standard top rail, mid rail and toe board. Employees shall use a personal restraint device consisting of a full body harness and short lanyard (long enough to enable work to be performed, but short enough to keep an employee within the rail system in case of upset/collision) attached to a secure anchor point capable of supporting a 3,000 pound force when working/riding on the trailer. Such in-house or after market alterations, designs or assemblies shall be approved by the Directors of Transportation Maintenance, Office of Fleet Administration & Support and Employee Safety and Health

before being placed in service.

~ and ~

- B. The equipment is utilized within an established work zone
- C. The towed equipment and operator is protected by a shadow/barrier vehicle, (i.e.: TMIA)
- D. The speed of the towed equipment is less than 5 mph
- E. The operator of the equipment remains in full view or communication of the towing operator
- F. The operator rides on the towed equipment only during actual spraying or mulching tasks and not during transport from one location to another

Any other towed equipment that would require an employee to ride on it requires the prior approval of Transportation Maintenance, the Office of Fleet Administration Services and Employee Safety and Health before being utilized in this mode.

Lighting on towing and towed vehicles will conform to the NYS V&T Law.

Operators are responsible for checking and never exceeding the manufacturer's rated towing capacity of the tow vehicle as well as the condition of the hitch assembly, including ball hitch or pintle hook and safety chains before towing equipment. If a defect is identified or suspected, the operator must complete a Vehicle Trouble Report (EM-3). If an EM-3 is made out, the pintle hook shall not be used until inspected by a mechanic, repaired or replaced.

Operators are responsible for periodic preventive maintenance of hitch assemblies, including inspection and proper lubrication. If grease fittings are not available, a mixture of kerosene and oil will be used to clean and lubricate the hitch. Remove excessive road dirt and other buildup routinely. Rusted, "frozen", or broken pintle hooks will be repaired by a mechanic. Heat must not be applied to a pintle hook to "free it up."

Safety Chains - Safety chains are required for all towing. Their condition should be checked carefully before each use. Safety chains keep the towing and towed vehicles together and control the direction of travel of the towed vehicle in the event of a coupling device failure. Safety chains must be short enough to keep the drawbar from contacting the ground, and be connected to cross beneath the tongue of the towed vehicle. If the towed vehicle becomes disconnected, the chains will support the tongue and drawbar, and allow for a safe stop.

Safety chains must be no longer than necessary to provide slack for turning. They must never drag on the ground. Crossing the safety chains provides directional control to the towed vehicle. Attachment points on the towing and towed vehicles should be as close to the frame width as possible. This will cause the safety chain on the right side of the towing vehicle to pull the towed equipment to the right, while the left side will pull the towed equipment to the left. This balance will result in proper tracking and better control of the towed equipment when stopping. Attaching the chains near the center allows considerable off-tracking and severe lateral movement, which can result in safety chain failure or striking oncoming vehicles. There should be a swivel on a pintle hook or on the ring, but never on both.

Utilizing safety chains of proper size and condition are important factors in safe vehicle operation. When attaching safety chains to the towed vehicle, the hook must be as strong as or stronger than the chain.

A hinged tongue is not an integral part of the trailer. If the towed vehicle has a hinged tongue drawbar, the safety chain must be attached to the frame, not the drawbar.

Welding Repairs

Welding of pintle hooks, drawbars and couplers to either repair a broken part or build up a worn surface is prohibited. Weld repairs can reduce the strength of the device, cause metal fatigue, and ultimately cause equipment failure.

Inspection and Replacement

All coupling devices and safety chains must be regularly inspected. Additional inspection must be conducted immediately upon binding of the drawbar during backing, jackknifing, or if bottoming of articulation or oscillation occurs. Immediate replacement is required if cracks or excessive wear is detected.

Towing Speed

Prudent speed must be observed at all times to avoid excessive sway of towed equipment. Weather conditions will also determine safe speed.

Weight Distribution

Negative tongue pressure from the drawbar of the towed equipment will cause undue stress on the top of the pintle hook. Up and down motion of the drawbar could cause the upper portion of the pintle hook to fail or fracture. Weight of the towed equipment must be distributed so that down pressure is applied to the pintle hook. For example, load distribution on a trailer should create slight down pressure of the drawbar on the pintle hook. The balance of towed equipment should not be upset by storing tools or supplies in the rear of the towed object, or on the rear of the trailer.

TRAILERING EQUIPMENT

Equipment will be loaded and unloaded by qualified personnel.

Check condition of trailer before loading.

Check for special tools (chains, binders, blocking).

Check tires for proper inflation and good condition.

Check lighting and brake connections between towing vehicle and towed equipment.

Inspect wheel lugs, nuts and rim position.

Check for weak or bad links in binding chains.

Inspect for loose or weak planks on trailer bed.
Look for worn air hoses.
Check inspection stickers.

Steel to steel contact between equipment being moved and the trailer should be eliminated using rubber belting or wood blocking. Steel to steel contact can cause load shifting.

Equipment being moved shall be crossed chained to avoid shifting, with no less than a four point hookup. Binder chains must be in good condition. Soft steel chains will stretch under stress and can cause a load to shift, or cause the chain to break. High tensile transport chain shall be used. Check chains for tension periodically during long moves. Ratchet binders should be used, if available. Binders shall be compatible in strength with the type of chain used.

Check height of equipment being moved. Research and plan your route prior to transporting equipment. Determine the height of the lowest overhead obstacle in route, including overhead wires.

Tilt bed trailers are designed for small equipment only. Do not exceed manufacturer load limitation. Weight must be centered slightly forward on the trailer. When load is secure the trailer ring should bottom into the pintle hitch.

Ramps used to load equipment onto trailers must be of adequate strength, wide and long enough to provide a safe loading area, and properly positioned and stable. Ramp surface should be clean, and the hauling vehicle blocked to prevent movement.

When towing rollers with transport wheels, wheels must be locked in the lowered position. Check tires for proper pressure and condition before transporting.

Trailer Routing Procedure Regions shall assure that all highway locations which might cause a clearance problem for a trailer transporting a piece of equipment be identified and avoided. This applies to locations where the trailer might get "hung up" on a railroad crossing, or caught beneath a low clearance bridge crossing.

The procedure will consist of the following:

- All locations which could cause a clearance problem must be identified.
- A list of all Regional locations will be prepared and placed in each tractor, along with a map of each County showing these locations.
- Residency management will review and approve the route prior to the actual move.
- Each operator will measure height, length, and width, and compute total weight of the load. If load exceeds legal maximums, operator will not move the vehicle.
- Only qualified operators will transport equipment.

Trailer Jackknife Jack knife means the angle between tractor and trailer becomes so severe it can't be straightened out by the driver. Fifteen (15) degrees is all that can be corrected. A jackknife can start with the trailer swinging out of line with the tractor, or with the tractor skidding sideways. Skid out is started when drive wheels spin from too much power, or lock from engine deceleration, or by going into a turn too fast where drive wheel tires can't hold the tractor on course.

Trailer swing out results mostly from over braking the trailer. Crowned roads, sharp turns or rough roads contribute to the problem. The best way to correct for a jackknife is to prevent it from happening. Brake before a turn, not in it. Apply power to drive axle smoothly, make smooth gear shifts and clutch engagements. Decelerate slowly, applying brakes cautiously.

Trailer hand valves (trolley valves) can help, but it's easy to lock trailer wheels and cause trailer swing. Keep an eye on mirrors when making stops on ice. If the trailer starts out, release brakes and get things straight before applying them again. Steering is more important than braking when making a recovery, as long as correction is started promptly. When the jackknife reaches 15 degrees, it's too late.

Think ahead. Leave room ahead to maneuver if jackknifing starts. Practice what to do if the tractor were to skid right or left, so actions to keep control are done automatically. Stay calm. A sudden jerk of the wheel can worsen the problem. When the tractor indicates a tendency to skid out, reduce power. Sudden down shifting can add to skidding.

OPERATOR MAINTENANCE SAFETY

Before working on a machine, remove key or disconnect battery to prevent accidental starting. Refer to manual section on Lock Out/Tag Out.

- NEVER perform any work around or near unguarded moving parts on a piece of equipment.
- Make sure the machine is blocked and on level ground before starting maintenance. Lower hydraulic attachments to the ground, or block securely. Block dump boxes.
- Relieve hydraulic pressure by working controls in both directions with the engine off. Observe lock out/tag out procedures.
- Stop the engine before removing inspection covers. Don't let tools or loose objects fall into openings. Always shut off engine when checking or adjusting belt tension.
- Remove all pressure caps carefully and bleed pressure from accumulators. Wait until coolant is cool before removing radiator cap.
- When charging a battery, leave compartment open for ventilation. Never check battery charge by placing a metal object across the posts, use a volt meter or hydrometer. Open flames or other sources of ignition shall be kept away from batteries.
- Supervisors must ensure that employees, especially trainees, are properly trained before performing any task. On-the-job training is not a substitute for formal training by an Equipment Operator Instructor.

TIRE MAINTENANCE & REPLACEMENT

Check air pressure in every tire daily. Add air from a safe distance that permits you to stand beyond the tread. Use a safety in-line gauge for inflating tires. When excessive tire pressure is caused from the heat of overloading or speeding, do not bleed tires --- reduce the operating load and/or speed.

When checking air pressure, check for objects wedged between duals, mismatched duals, missing valve caps or wheel lugs, tire cuts or abnormal or uneven wear, damaged or poor fitting rim, and projecting body hardware. Deflate damaged tires immediately, particularly where plys are cut.

Replacing Damaged Duals

When a truck is fully loaded and one tire blows, replace both tires on the same side at the same time. The remaining inflated tire should be deflated before duals are repaired. When a truck is loaded at or near capacity, impact caused by the blow out may damage the tire, rim assembly, etc. on the remaining dual. This damage may be impossible to detect, and result in a loaded truck operating unsafely.

This applies only when a **blow out** occurs while the vehicle is operating, and loaded at or near capacity. It does not apply to flats due to gradual air loss, or tires run flat until noticed by the operator. This precaution is the direct result of severe impact.

Inside duals should never be run up onto a block to elevate the truck for the purpose of changing the outside dual. The vehicle must be jacked up under the axle to remove the weight from the wheel assembly before dismounting the wheels.

MULTI-PIECE RIMS

Definitions

Multi-piece rim - Vehicle rim consisting of two or more parts, one of which is a side or locking ring designed to hold the tire on the rim by interlocking components when the tube is inflated, regardless of the sizes of component parts.

Servicing - Mounting or dismounting of multi-piece rim wheels, and inflating, deflating, installing, removing, maintaining, handling or storing multi-piece rim wheels.

Training

Any employee who engages in any aspect of servicing multi-piece rims shall first receive training on proper procedures and safety precautions.

Tire Servicing Equipment

A restraining device shall be used when servicing multi-piece rim wheels capable of preventing rim components from being thrown beyond the device. They shall be inspected prior to each use, and after any accidental separation of wheel components. Any device showing evidence of cracks at welds, cracked, broken, bent or sprung components, or pitting due to excessive corrosion shall be removed from service and not used until inspected and repaired.

A clip-on-chuck with sufficient hose length to allow the employee to stand clear of the potential trajectory of the wheel components, and an in-line valve with gauge or pressure regulator preset to a desired value, shall be used to inflate tires.

Current charts shall be available in the service area. "Charts" mean the U.S.D.O.T. National Highway Traffic Safety Administration publications entitled "Safety Precautions for Mounting & Dismounting Tube-Type Truck/Bus Tires" and "Multi-Piece Rim/Wheel Matching Chart"; or any other publications containing the same instructions and safety precautions applicable to the types of multi-piece rim wheels being serviced. Only tools recommended in the rim manual for the type of wheel being serviced shall be used.

Wheel Components

Wheel components shall not be interchanged except as provided in the charts, or in the applicable rim manual. Wheel components shall be inspected prior to assembly. Rim bases, side rings or lock rings bent out of shape, pitted from corrosion, broken or cracked shall not be used, but discarded. Mating surfaces of the rim gutter, rings and tires shall be free of dirt, surface rust, and scale or rubber buildup prior to mounting and inflation.

Safe Operating Procedure

Tires shall be completely deflated before dismounting by removal of the valve core.

Tires shall be completely deflated by removing the valve core before a wheel is removed from the axle when:

- The tire has been driven under-inflated at 80% or less of recommended pressure.
- There is obvious or suspected damage to the tire or wheel components.

Rubber lubricant shall be applied to bead and rim mating surfaces during assembly of the wheel and inflation of the tire.

Tires shall be inflated only when contained in a restraining device. However, when the wheel assembly is on a vehicle and the tire is under-inflated but has more than 80 percent of the recommended pressure, and if remote control inflation is used and no employees are in the trajectory, tire cages are not required.

When a tire is being partially inflated without a restraining device for the purpose of seating the lock ring or to round out the tube, inflation shall not exceed 3 psi.

When a tire is in a restraining device, employees shall not lean on or rest equipment on the device.

After tire inflation, the tire, rim and rings shall be inspected while still in the cage to insure proper seating and locking. If further adjustment is necessary, the tire must first be deflated by removal of the valve core.

No attempt shall be made to correct the seating of side and lock rings by hammering, striking, or forcing the components while the tire is pressurized.

Cracked, broken, bent or otherwise damaged rim components shall not be reworked, welded, brazed or otherwise heated.

Whenever multi-piece rim wheels are being handled, employees shall stay out of the trajectory unless their presence is necessary to the operation.

SLINGS, WIRE ROPE AND LIFTING CHAINS

All hooks used for loads shall have an approved safety latch to close the hook.

Slings

Slings, fittings and fastenings shall be inspected daily for evidence of overloading, excessive wear, or damage. Defective slings will be removed from service and discarded. Protection must be provided between the sling and sharp load surfaces.

Wire Rope

Wire rope or cables shall be inspected at the time of installation and once each week during use. They shall be removed from hoisting or load-carrying service when kinked, or when one of the following conditions exist:

- When 3 broken wires are found in one lay of 6 x 7 wire rope.

- When 6 broken wires are found in one lay of 6 x 19 wire rope.

- When 9 broken wires are found in one lay of 6 x 37 wire rope.

- When 8 broken wires are found in one lay of 8 x 19 wire rope.

Wire Rope Clip Chart

Diameter (inches)	Number of Clips		Minimum Spacing (inches)
	Drop Forged	Other Material	
1/2	3	4	3
5/8	3	4	3 3/4
3/4	4	5	4 1/2
7/8	4	5	5 1/4
1	5	6	6
1 1/8	6	6	6 3/4
1 1/4	6	7	7 1/2
1 3/8	7	7	8 1/4
1 1/2	7	8	9

NOTE: Wire rope assemblies having more clips specified by the manufacturer than appear in the chart above require that number of clips at all times.

Drums, sheaves, and pulleys should be smooth and free from surface defects. Those having eccentric bores or cracked hubs, spokes, or flanges, should be removed from service.

Wire rope clips attached with U-bolts should have the U-bolt on the dead (short) end of the rope. U-bolt nuts should be retightened immediately after initial load-carrying use and at frequent intervals. When a wedge socket fastening is used, the dead end of the cable should be clipped with a U-bolt.

Hooks, shackles, rings, pad eyes, and other fittings that show excessive wear or that are bent, twisted, or otherwise damaged will be removed from service.

MOWING

Personal Protective Gear - Approved hard hats, eye protection, vests, shirts or jackets, and hearing protection shall be worn while mowing on tractors not equipped with an enclosed cab. **PPE is required** when exiting mower within ROW.

Safety Equipment

Mowers operating in the ROW, shall have an amber beacon operating at all times. If the beacon is inoperable, and it becomes necessary for the mower to encroach on the pavement, the mower shall be followed by a vehicle with operating beacon or arrowboard.

All mowers shall be equipped with at least two orange flags, each at least 18" square, located at the side of the mower or tractor, whichever is wider.

A slow moving vehicle placard shall be conspicuously located at the rear of the tractor.

"Mowing Ahead" signs shall be used at one or both ends of the area being mowed.

Seat belts shall be worn while mowing.

A fire extinguisher and first aid kit shall be on the mower at all times. The engine shall be shut off when refueling. The mower shall not be left unattended during refueling.

Operating Procedures

Mowing shall be performed in "pairs," where and when possible. If not mowing in "pairs", operators shall be provided with some form of communication.

Prudent judgment shall be exercised when operating a mower on any slope. Never attempt to mow a slope so steep as to cause the mower to become unstable.

If at any time it is necessary for a mower to travel under a darkened structure without the benefit of a beacon, it shall only be done with a following vehicle with a beacon or flashing arrow.

When operating mowers, especially in unfamiliar areas, be alert for ditches, holes and obstructions.

When operating a rotary mower and passing over roads, intersections, driveways and other areas where a mower can throw foreign objects, the mower unit shall be raised or the blades disengaged.

The breakaway latch must be checked frequently for tension and lubricated regularly. The cutter bar should be greased at least daily. Before placing the cutter bar in the breakaway latch, the tractor must be out of gear.

When attempting to make cutter bar repairs, the engine must be shut-off, the transmission lever and lever activating the knife in neutral, and wheels blocked.

In the event that knives become clogged, disengage power-take-off (PTO) clutch, raise cutter bar about one foot, and with a stick or similar tool work the object loose. Never use hands. Always wear eye and hand protection when sharpening knives.

Over-the-Rail Mowers

Mowers are capable under some conditions of throwing objects great distances. Stop mowing if pedestrians are within 100 yards unless:

- Front and rear deflectors, or chain guards, or bands are installed and in good working condition.
- Mower sections are running close to and parallel to the ground without exposed blades.
- All areas have been thoroughly inspected and all foreign material such as rocks, cans, glass and general debris removed.

Where there is grass and weeds high enough to hide debris that could be struck by blades, the area should be inspected and large debris removed, mowed at an intermediate height, inspected closely with remaining debris being removed, and mowed again at desired final height. Operators and all support personnel shall wear foot protection, hard hats and safety glasses at all times to protect against falling and thrown objects. Always wear seat belts whenever the tractor or mower is running.

Before leaving the tractor seat, always disengage the PTO. Turn the tractor engine off, and wait for all moving parts to stop. Place the tractor shift lever into a low range gear or "park" to prevent the tractor from rolling. Never mount or dismount a moving tractor. Operate the tractor controls from the tractor seat only.

The boom is designed only to position the mower head. Never attempt to lift, pull, or push other objects with it. Never walk or work under any raised boom or mower head. Always lower the boom and mower head flat on the ground or support the boom and head on safety stands. Unload all hydraulic actuators prior to doing any maintenance. To do this, set the cutter head on the ground, then turn off the tractor engine. Push and pull the lift and tilt control valves in and out several times to remove pressure. Do not work under raised boom or head unless components are securely blocked.

When the mower is swung to the side (working position), the tractor can rock from side-to-side. Extreme care should be taken when operating on slopes.

This unit is equipped with a safety start lockout switch. The tractor will not start if the switch is in the ON position for the mower head. Do not disconnect the switch. Do not operate the tractor if the switch has been damaged or disconnected.

The boom and mower head change the balance of the machine in transport. Be especially careful when transporting on slopes. Never turn uphill in transport except at very slow speed and a low rate of turn. Never transport or operate on steep slopes. This mounted implement removes weight from front wheels and can affect steering. Transport slowly on rough surface to prevent front wheels from bouncing.

The mower should be transported so it does not block the operator's view to the front or rear. It is the responsibility of the operator to maintain a clear view all around the machine during operation and transport.

Always maintain safety decals in good readable condition. Damaged or unreadable labels should be replaced. Refer also to safety messages and operating instructions in each of the appropriate sections of the tractor and mower manuals. Pay close attention to the safety signs affixed to the tractor and mower.

As part of the start-up procedure, engage the cutter control valve at low engine RPM and run the mower slowly for a short period until all air is removed from the hoses. Keep all persons clear of mower since blades can throw objects with great velocity for a considerable distance.

Do not exceed 2 MPH while operating. For cutting heavy brush and limbs, it is usually best to stop the tractor and move the mower head into the work.

Keeping the right hand resting on the head control lever while mowing will allow quick reaction if an unexpected obstacle is encountered.

ALTERNATIVE MOWERS

Refer to OOMI 06-8 for guidance

WINTER OPERATIONS

This section provides operators with safety information on snow and ice operations. More detailed information is available in the Transportation Maintenance Guidelines or the Equipment Operator Snow and Ice Manual. Every employee involved in snow and ice operations is responsible to become familiar with this information and adhere to the procedures, guidelines and policies herein. Supervisors and managers are responsible for ensuring compliance.

VEHICLE & TRAFFIC LAW

The Vehicle and Traffic Law allows state highways to be cleared of snow and ice during emergency conditions using whatever means are available. This does not mean, however, that Department vehicles may violate the law by, for example, ignoring traffic control devices such as stop signs and traffic signals. Operators must use sound judgment and consult supervision, if necessary, in interpreting such latitude in the Vehicle and Traffic Law.

Operators must proceed with due regard for the safety of all persons. Any unusual operation must be performed with care and only when normal operating patterns will not solve a problem. Supervisors shall be notified of such unusual operations before they are undertaken.

GENERAL WINTER PRECAUTIONS

Safe winter driving is primarily common sense and a knowledge of basic facts. When starting out, get the feel of the road by gently accelerating, braking, and turning. Recognize that conditions change constantly.

Too high a speed on slippery roads is a common hazard. More space between vehicles is required. Stopping distances are increased on ice, especially "wet" ice. As temperature rises, ice becomes more slippery.

Remove snow and ice from windows, mirrors and lights before starting out. A "peep hole" in the windshield is illegal. Scrape, brush, use the defroster, and wipe off inside fog. Be sure wipers are in good shape. Winter snow blades are recommended. Lights and reflectors covered with snow or salty splash lose half their effect.

Heater/Defroster: At the start of cold weather, be sure water from the engine is not shut off from the heater. Check controls to be sure they're not binding and that the fans work.

Wipers/Washers: Test both periodically. Replace worn blades that streak. Check water reservoir for level.

Tires: Check for good tire tread and proper inflation.

Chains: Check for worn or broken cross links or bent or broken side chain fasteners. Be sure

they fit, and are in the truck when needed.

Lights: Lights are critical in bad weather. Wipe them off. Salt spray can easily reduce output by half. Check that all lights are in operating condition, and reflectors are clean. Headlights must be on when windshield wipers are required.

Brakes: Check brakes for adjustment. Make sure all are working properly.

Personal Gear: Place warm clothes in the vehicle in case of breakdown.

Fuel: Keep fuel tank as full as possible at all times.

Carbon Monoxide: During winter weather, it is common practice to use a vehicle cab to get out of the elements and warm the body during the workday. When this is done, and the engine is left idling, be sure to leave a window open to insure adequate ventilation. Listen carefully for sounds that might indicate a leak in the exhaust system. If a suspicious noise is detected, have the vehicle inspected by Office of Fleet Administration & Support personnel.

Winter weather often requires employees who work outdoors to change work habits, or at least give additional thought to extra precautions necessary to accommodate the changed work environment. Driving is not the only aspect of work adversely affected by winter.

Wear appropriate clothing - refer to information on hypothermia and frostbite in section on Cold Weather Hazards. Proper footwear is important, not only to protect against cold, but to assure the best footing on icy surfaces.

Remove ice and snow from walking surfaces, and surfaces used to get in or out, or on top of vehicles. Be sure of footing before relying on any surface for support.

Even if all lights are working, other drivers can become confused in winter weather. Don't park along the shoulder in a storm except in an emergency. Use four-way flashers. In bad weather always assume the other driver can't see you.

Never trust ice over running water. Stay off any ice covering any body of water.

Traction

The ability to obtain traction is difficult in winter driving. Overpowering the drive wheels not only reduces pulling power, but can throw the vehicle into a skid. Be particularly careful on turns or curves. A spinning drive wheel, like a locked wheel, has no cornering ability. Ease into the throttle to get the feel of how much traction is available. Find the point where the wheels roll without spinning.

When coming to a stretch of ice, don't back off the accelerator suddenly. Sudden engine drag

can cause locked drive wheels. Steady throttle position, neither accelerating nor decelerating, is the way to cross a bridge, where the deck is often icy when the rest of the road is clear.

The ability of vehicles to pull is a function of road surface, tire tread design and weight of the drive wheels. Check tires for good tread at the start of winter. Badly worn tires will provide little or no traction. The Vehicle and Traffic Law requires tires to have minimum tread depth. Replace tires before tread is illegal. Don't let air out of the tires to gain traction.

Depending on temperature, braking distance on ice will be 4 to 10 times greater than at the same speed on dry pavement. To compensate for the most slippery condition, reduce speed by one-third. Even then, control won't be as good because steering ability is reduced along with stopping ability. Good tires and chains help with braking. With ice or snow under the wheels, brakes can lock the wheels. Rolling wheels are necessary to keep control. Fanning the brakes is the best way to obtain a safe stop. For vehicles with ABS systems, a constant steady pressure on the brake pedal is best.

Control depends on all axles, not just the steering axle. On a tractor-trailer combination, holding the trailer hand valve down leads to trailer swing-out. Trailer wheels have to roll in order to follow the tractor. Fan the foot valve to activate all brakes on and off together. Watch for locked drive wheels that can stall the engine, especially with engine assisted brakes. Refer to information on trailering equipment in section on Vehicle and Equipment Operation.

Steering

When brakes are applied on ice, it's easy to lock the front brakes and eliminate steering capability. To restore steering, disengage the brakes and let the front wheels roll again. Directional control is a function of side force on tires. Ice or snow covered roads don't provide as much side force as dry pavement. Compensate by reducing speed to reduce the force required to guide the vehicle through a curve.

Mounting and Dismounting Vehicles and Equipment

- Check bottom of shoes for grease, snow or ice before mounting.
- Clear steps of snow and ice before climbing.
- Anticipate stepping into the cab. Starting on the wrong foot will lead to an awkward position at the top step.
- Use 3-point contact method (hand holds or grab rails) to facilitate entry and exit.
- Never step out of the cab frontwards to dismount. The proper way is to back out, retracing entry steps.
- Never jump from the cab or from any other part of the vehicle or equipment. Use proper steps, ladder, etc.
- When discharging a passenger, a driver must establish visual contact with the passenger to assure that he or she is clear of the vehicle before moving, including the right wing of a plow truck.

COLD WEATHER HAZARDS

This section reminds employees working outdoors of the hazards of prolonged exposure to severe winter weather – **FROSTBITE AND HYPOTHERMIA**. Extremely important is the **WIND CHILL FACTOR**, combining wind force and actual temperature. Severe wind chill can significantly increase potential for frostbite and hypothermia, as shown by the wind chill chart on the following page.

Frostbite

Description - Symptoms - Frostbite is the most common injury caused by exposure to cold. Just before frostbite occurs, skin may become slightly flushed, pink in color, then change to white or grayish yellow as the condition develops. Pain sometimes occurs, followed by a feeling of intense cold and numbness. When frostbite is severe, large blisters appear on and beneath the skin. The affected area is hard, cold and insensitive.

Precautions - Avoid prolonged skin exposure to extreme cold. Proper clothing, a buddy system to check on one another, and staying dry are critical. Clothing should be warm, layered and loose-fitting. Tight-fitting clothing cuts circulation and increases risk of frostbite.

Treatment

- Cover affected areas and provide extra clothing and blankets.
- Bring victim indoors as quickly as possible.
- Provide a warm drink (non-alcoholic).
- Warm the frozen part by soaking in warm water, or wrap affected area in a sheet and warm blankets.
- Do not massage, but exercise the limb once it is warmed.
- Discontinue warming as normal skin color is restored.
- Do not break blisters.
- Seek medical help as soon as possible, elevate affected limb in transport.
- Discontinue fluids if vomiting occurs.

Hypothermia

Description – Symptoms - Hypothermia is rapid and progressive physical and mental collapse due to loss of body heat. It is caused by a combination of cold, exhaustion, wind chill, and wetness. Hypothermia can occur in above freezing temperatures. Symptoms are uncontrollable shivering, drowsiness or exhaustion, slurred speech, fumbling or staggering, and lack of concern for physical well-being. Except for shivering, a victim seldom realizes its development.

Precautions – As with frostbite, dress in layers, stay dry, and avoid sweating. Carry candy or other high energy food for quick energy and body fuel. Limit exposure, particularly in rain and snow. Never ignore shivering.

Treatment

- Go indoors and put on dry clothing.
- Drink warm liquids (non-alcoholic) and eat high energy foods.
- If the victim is semi-conscious, try to keep awake, if unconscious – try to waken.
- Remove wet clothing, wrap in blankets, and provide a source of heat.
- Seek medical attention as soon as possible.

Wind Chill Chart

Wind speed (mph)

Temperature
in
Fahrenheit

Calm mph→	5	10	15	20	25	30	35	40	45	50	55	60
40	36	34	32	30	29	28	28	27	26	26	25	25
35	31	27	25	24	23	22	21	20	19	19	18	17
30	25	21	19	17	16	15	14	13	12	12	11	10
25	19	15	13	11	9	8	7	6	5	4	4	3
20	13	9	6	4	3	1	0	-1	-2	-3	-3	-4
15	7	3	0	-2	-4	-5	-7	-8	-9	-10	-11	-11
10	1	-4	-7	-9	-11	-12	-14	-15	-16	-17	-18	-19
5	-5	-10	-13	-15	-17	-19	-21	-22	-23	-24	-25	-26
0	-11	-16	-19	-22	-24	-26	-27	-29	-30	-31	-32	-33
-5	-16	-22	-26	-29	-31	-33	-34	-36	-37	-38	-39	-40
-10	-22	-28	-32	-35	-37	-39	-41	-43	-44	-45	-46	-48
-15	-28	-35	-39	-42	-44	-46	-48	-50	-51	-52	-54	-55
-20	-34	-41	-45	-48	-51	-53	-55	-57	-58	-60	-61	-62
-25	-40	-47	-51	-55	-58	-60	-62	-64	-65	-67	-68	-69
-30	-46	-53	-58	-61	-64	-67	-69	-71	-72	-74	-75	-76
-35	-52	-59	-64	-68	-71	-73	-76	-78	-79	-81	-82	-84
-40	-57	-66	-71	-74	-78	-80	-82	-84	-86	-88	-89	-91
-45	-63	-72	-77	-81	-84	-87	-89	-91	-93	-95	-97	-98

Frostbite Times

30 Minutes

10 Minutes

5 Minutes

ONE PERSON PLOWING (OPP)

Operational policies are necessary to accomplish snow and ice activities efficiently and safely. It is impossible to develop standards and procedures that apply to every situation. Good judgment, common sense and a reasonable degree of flexibility for unforeseen or special circumstances are necessary.

Training & Certification Requirements

Transportation Maintenance employees who perform snow and ice control activities must be trained and, where applicable, eventually certified or recertified in order to operate snow and ice equipment. If a license of any kind is required to operate a vehicle, employees are required to possess the appropriate license. A Commercial Driver's License (CDL-B) with no airbrake restrictions is required to operate large dump trucks.

To be certified to perform OPP, operators must attend classroom and shop session training, and satisfactorily demonstrate in-yard and over-the-road skills.

The final step is to satisfactorily demonstrate ability to perform OPP during actual snow and ice conditions, based on evaluation by an Equipment Operator Instructor (EOI), or a qualified evaluator other than the employee's immediate supervisor. The evaluator must allow a reasonable period for the operator to demonstrate necessary skills.

OPP certification and recertification shall be valid for a calendar year. To be prepared for snow and ice operations, it is permissible to begin to certify/recertify operators in the fall. Recertification can be completed in the fall, however, to be certified the candidate must perform during actual snow and ice conditions.

To become recertified, operators must attend classroom and shop session training and have been certified for the previous snow and ice season, and operated successfully during that season. "Successfully" means without a preventable vehicle accident or incident during snow and ice operations, and operated in the OPP mode for a minimum of half of the previous winter.

Although a candidate for recertification may have successfully operated during the past snow and ice season, supervisors, instructors and the candidate must be comfortable with the candidate's ability to perform OPP. Supervisors and or residency management may require that a candidate for recertification do any or all of the following:

- Receive additional training.
- Perform a dry-run, in-yard skills demonstration.
- Perform a dry-run, over-the-road skills demonstration.
- Perform during snow and ice conditions.

The candidate for recertification may request and receive any of the above.

Additional Training Requirements

In addition to OPP certification and recertification requirements, all employees must receive basic training prior to performing snow and ice control activities for the first time. Refresher training should also be provided for all other employees. Training should include:

- Backing policy, which in most cases requires the operator to receive assistance.
- Safety equipment for each vehicle such as flags, reflective triangles, fire extinguisher, tire chains, accident reports and other documents in the blue folder.
- Seat belt use and personal protective equipment.
- Use of wing safety chain and wing stand.
- Vehicle inspection requirements.
- Awareness of obstacles, stranded vehicles.
- Turning and parking.
- Highway markers and snow stakes.
- Climbing in and out of vehicles.
- Review of routes.
- Tailgate removal and replacement.
- Securing tools and equipment in the cab.
- Hopper installation and removal.
- Hopper climbing/ladder.
- Shoulder plowing operations.
- Plowing speeds.
- Radio communication procedures.
- Truck permits (V&T Law)

Certification Requirements

There are two (2) classifications of OPP certification:

- Front plow and right wing.
- Front plow, right wing and left wing.

To become OPP certified, the operator must attend classroom training on:

- Equipment requirements.
- Safety procedures and policies.
- Pre-operational check of the truck, plow, wing and spreader.
- Mobile radio operating procedures.
- Periodic communications.
- Length of continuous duty.
- Backing policy.
- OPP applicability & exceptions.

In addition to classroom training an operator must attend shop training on the pre-operational

check of large dump trucks, plows, wings and spreaders.

All new employees or those who have not performed OPP successfully for a minimum of half of the previous snow and ice season, must satisfactorily demonstrate dry run and over-the-road skills to acceptably:

- Steer, shift, brake, and operate appropriate plow and spreader controls.
- Lower the wing(s) correctly within 6" of the ground while the truck is moving.
- Turn right and left around a corner with the wing(s) down.
- Assess additional width of vehicle with the wing(s) down.
- Maneuver around obstacles or narrowing road under actual conditions.
- Maneuver through an intersection.
- Raise the wing(s) while the truck is moving.
- Park the vehicle and secure wing safety chain(s).

The final step in certification training is over-the-road skills demonstration with plow and wing during actual snow and ice conditions. The operator must satisfactorily demonstrate the ability to perform all tasks under actual highway conditions. Assessment of the operator's performance will be determined by the EOI or Supervising EOI. If the employee's performance is acceptable for all criteria, the operator is certified for the appropriate classification of OPP. If performance in any area is not acceptable, the operator will be trained in deficiencies noted and re-evaluated.

Recertification Requirements

There are two (2) classifications of OPP recertification:

- Front plow and right wing.
- Front plow, right wing and left wing.

To be recertified the operator must attend classroom and shop training covering the same curriculum for certification.

Dry run and over-the-road skills demonstrations are not required for recertification. However, the residency management or supervisor may require over-the-road performance for operators they feel need further assessment. Operators may also request an over-the-road assessment for themselves with or without plow and wing(s).

An operator whose performance is acceptable for all criteria is recertified for the appropriate classification of OPP. If the performance in any area is not acceptable, the operator will be trained in the deficiencies noted and re-evaluated.

Operators should have an opportunity for experience on a large dump truck prior to the snow and ice season.

Supervisors are required and shall attend all classroom and shop training annually.

OPP Recertification Following a Preventable Accident

The following situations may require a re-evaluation:

- An operator is involved in a preventable accident.
- Unsatisfactory or unsafe operation of equipment (or performance of a certified maintenance skill) as judged by a Supervisor or Resident Engineer, Group manager, or Program manager.
- A third-party endorsement or certification that must be renewed on a periodic basis, such as a HAZMAT endorsement.
- OPP certification, where all operators must be recertified each year.
- When an operator is judged to be operating a piece of equipment in an unsatisfactory or unsafe manner, the Resident Engineer, Group manager, or Program manager, may suspend the operator's certification (and the operator's authorization to operate/perform) for that equipment or task and other related equipment or task as appropriate.

NOTE: The Supervisor/Resident Engineer, Group manager, or Program manager, always has the right and responsibility to immediately remove an employee from an operating *assignment* if the operator is performing in an unsafe, or unsatisfactory manner or for any other reason that adversely affects safety or productivity.

When an operator's certification is suspended, the Resident Engineer, Group manager, or Program manager must immediately notify the Regional Director of Operations or Regional Maintenance Engineer, or designee, who will then appoint a review committee consisting of at least two independent persons (who do not work at the facility where the suspension occurred) at Grade 13 or higher level to investigate the incident. A decision must be made by this review committee within five (5) business days of the suspension as to whether the suspension should continue until a re-evaluation is done or if the operator may continue to operate that piece of equipment until a re-evaluation is completed. If the review does not occur within the five working days of the suspension, then the suspended certification is reinstated back to the employee.

If the suspension is upheld by the review committee, the operator must be evaluated within thirty (30) calendar days of such suspension, with limited exceptions (such as weather conditions or availability of equipment, as well as absenteeism of the operator which will result in the extension of the thirty (30) calendar days by the number of days the operator is absent). The evaluation is to be scheduled on a priority basis. The components of the evaluation will depend on several factors, such as the nature, circumstances and severity of the incident, the past operating history of the employee, and the Supervisor's Report of Accident Investigation (SAF 9) as applicable.

The Resident Engineer, Group manager, or Program manager, in consultation with the review committee, will determine the components of the evaluation. The components can range from a minimum of a verbal discussion of the incident with a supervisor or (S)EOI, to a classroom *and/or* shop session *and/or* a skills demonstration with an evaluation committee (or for OPP, dry *and/or* actual conditions demonstrations).

OPP Recertification

All OPP operators must be recertified. There are two levels of annual recertification:

- A. Complete recertification (classroom, shop session, over-the-road dry conditions and over-the-road actual conditions)
- B. Refresher recertification (classroom and shop session).

To qualify for the refresher recertification, an operator must meet all of the following requirements:

- 1. OPP certified the previous year;
- 2. Operated in OPP mode at least one-half of the previous winter season as determined by the Resident Engineer;
- 3. Operated the previous season without a preventable OPP accident or unsatisfactory/unsafe incident.

An employee who does not meet all the requirements for the refresher recertification must complete all the elements of the complete recertification.

OPP recertification (and certification) is valid for a calendar year (January 1 to December 31). To facilitate the annual recertification process, it is permissible to recertify (and certify) operators in the fall (beginning around September 1) prior to the actual certification year.

If an operator has a preventable accident during OPP operations and is then required to be evaluated according to the "Preventable Accident or Unsatisfactory/Unsafe Operation" policy described above, the certification only reinstates the current year's certification; it does not certify the employee for the coming season. In this case, when OPP certifications are conducted the following fall, the employee will be required to perform a complete recertification to be recertified for the coming season, since the employee did not successfully operate in the OPP mode the entire previous season.

OPP SAFETY POLICIES AND PROCEDURES

Plowing speed is a critical factor in assuring safety of the public and Department operators, and depends on weather, road conditions, highway geometry, physical features, traffic and established guidelines. Plowing speed should be in the range of 15 to 35 mph. When visibility becomes extremely limited, an operator should slow down, raise the wing and proceed with the front plow only; or pull off the road to a safe location, turn lights off, and request further instruction.

Generally during OPP, wheels of the dump truck should stay in the travel lane. However, there are certain situations when OPP operations may allow the truck wheels to be on the shoulder. Shoulder characteristics and other conditions that permit one person shoulder plowing are:

- minimum shoulder width of 5 feet.
- unquestionably stable and reasonably smooth shoulder.
- favorable physical features beyond the shoulder including frozen or stable earth, few obstacles, and low fore slope angle.
- good visibility and relatively light traffic.

When clearing snow exclusively from the shoulder, operators should raise the front plow to avoid damaging the cutting edge. Clearing the shoulder is thus accomplished with the wing plow and the wing shall not exceed the paved surface. Operators should also be aware that traffic may attempt to pass their vehicle in the partially occupied lane.

Acceptable OPP shoulder plowing locations must be determined initially by the Resident Engineer, and then by the shift supervisor as conditions warrant. At various times, some shoulders are likely to be soft and unstable. Special care should be exercised before the shoulder freezes in the fall and thaws in early spring, or in extended warm periods during the winter. At such times, two people should be assigned to the truck.

If reasonably possible during single truck operations, lower the wing while in the right lane. Some wing lowering operations may be accomplished safely using other strategies. During tandem and close echelon plowing with radio communications between both operators, the wing may be safely lowered in any lane. In all circumstances, before lowering any wing on the road, the operator must check all mirrors and windows. If there is any indication that a vehicle is near the wing, the operator should not lower the wing.

Benching or shelving with the lock pins inserted in the right wing shall not be done alone. A wing person must be in the truck during this operation. Benching with the left wing may be done as OPP.

OPP operators should look for safe means to clean the windshield, plow lights, windows and check other areas of the truck, by using extensions on ice scrapers, squeegees, snow brushes, etc. The operator may climb the hopper ladder to inspect the load, or step up on the spinner to inspect the chute, as long as the three point climbing procedure is used and the spinner and conveyor are not engaged. Before climbing the truck ladder, the right wing must be raised and secured with safety chains. An alternative for checking hopper contents without climbing is to observe the gate opening.

OPP operators must radio the base station or another vehicle when exiting and re-entering the vehicle during snow and ice operations on the road.

During OPP, use of both wings at the same time is limited to close echelon plowing, and to unusual or special conditions on ramps and off-road areas. However, the geometry of some very limited sections of highway may require use of both wings to properly clear the pavement. These areas shall be identified and approved by the Resident Engineer.

Tire Chains - Tire chains may be provided for all large dump trucks and should be clearly labeled with the truck ID number. Tire chains should be installed at the work location with the help of other employees. An OPP operator shall not install tire chains in the field (away from the work location). If tire chains need to be installed in the field because of changing weather conditions, pull off the road to a safe area and call for assistance. Removing tire chains in the field alone may be done in rare situations where road conditions have changed such that chains are not needed and continued use may cause tire damage.

Wheel size on newer large dumps has increased, and will not accommodate tire chains originally fitted for older trucks. Trucks should be checked for properly fitting chains.

Backing for Snow and Ice Operations

Careful planning can minimize the need for backing during snow and ice work. When backing is unavoidable and visibility is poor during actual snow and ice operations, the wing person is not required to exit the vehicle to direct the backing maneuver; nor is the operator, if alone, required to exit the truck before backing. In such cases, the operator must use extreme caution, and back slowly and deliberately. Operators must make every reasonable effort to avoid backing, and are always fully responsible for the vehicle's safe operation.

Transportation Maintenance managers must carefully review their operations to limit and define those snow and ice situations or locations where this portion of the policy is applicable.

WHEN IN DOUBT, *DON'T BACK UP!*

Benching and Shelving

After a storm or during heavy snow, snow should be plowed back as far as possible to provide storage space. This can be done by plowing high snowbanks with the right or left wing plow elevated, and the locking pins in place. A wing person is required during this activity if the right wing is being used. If benching is unable to displace sufficient snow, a snowblower, if available, may be used.

Spot Benchng - OPP spot benching by experienced operators may be done for a limited duration in areas where drifting, sight distance and other critical road hazards exist. Spot benching must be done when traffic, highway configuration and visibility are favorable, at operator discretion with supervisory approval. OPP operators must remove locking pins, advise the radio dispatcher/supervisor prior to and after spot benching.

Plowing Around Obstacles

Operators and wing persons must be aware of fixed objects, (guiderail, curbing, etc.) along plow routes and be alert for stalled or abandoned vehicles on the pavement. Go over the entire route carefully before winter begins. U-turns should be avoided whenever possible.

Plowing Speed

Plowing speed depends on road surface conditions, highway geometry, physical features, traffic and local policy. Consideration must be given to where plowed snow is deposited. As plow speed increases, plowed snow will be deposited further from the highway. Plowing speed should be from 15 to 35 MPH. In open areas, depositing snow well off the highway is desirable. In populated areas, care must be taken to avoid damaging private property and creating undue snow removal for the public or municipalities.

Hopper Access

Employees shall not climb on top of or into hoppers on the road and may only do so at department facilities.

Work locations where employees work on or above hoppers will acquire or build an access platform or catwalk which complies with OSHA regulations. Regional safety staff may be used to assist with interpretation of the OSHA standards. All platforms or catwalks must be approved by the Regional Director of Operations and the Regional Safety Representative.

Employees shall work from these platforms/catwalks when servicing hoppers or other equipment that places them more than six feet above the floor or ground. When a supervisor has directed an employee to enter a hopper, the entry/exit will be made from/to the access platform or catwalk.

Ladders (including hopper ladder) may be used in limited circumstances if the task can be performed while both feet and at least one hand on the ladder and the ladder can not slip. However, alternate ground or platform-based methods for hooking/unhooking chains are preferred. Ladders shall not be placed against hoppers that are being suspended from loaders or other lifting equipment. Ladder use shall comply with state wide safety provisions under "ladder". Refer to the Fall Protection Safety Bulletin.

When a supervisor (HMS1/BRS1 or above) has determined that a platform or catwalk is not available or would not provide suitable access, and other fall protection is not practical, the supervisor may allow work from the subject locations on equipment but only if:

- the supervisor has made the employee aware of the provisions of "leading edge work" in Fall Protection Safety Bulletin as they pertain to that particular situation, and
- the supervisor verifies that those provisions are followed.

No employee shall climb onto the top of a hopper, into a hopper, or onto other high areas of the truck or equipment unless directed to by the supervisor in charge of the operation.

In addition, before anyone enters a hopper for any reason, the lock out – tag out procedure must be followed. Employees must wear a department approved hard hat when working on or beside a hopper for protection from falling objects.

Hopper Loading with Small Loader (0.85 CY bucket or less) - An OPP operator may use a small loader at an unstaffed location if communications (radio or cellular) are operational. When loading alone at an unstaffed location with any loader, the operator must be properly trained and certified, and must communicate by radio with another employee when exiting and re-entering the truck.

Loading Ramps - A loading ramp, with adequate side rails and end stop, should be used when loading hoppers. All loading ramps shall be inspected each year by the Resident Engineer for structural, functional and safety adequacy. Deficiencies shall be corrected before use. Large (2 CY or larger) loaders may load trucks and hoppers without loading ramps if the loading area is reasonably flat and stable.

Peaked Hopper Grates may be used only where significant amounts of abrasives are distributed and those abrasives have historically contained significant amounts of chunks. Peaked grates should be used only to screen material, not as a method to retain additional material above the hopper. All material above peaked grates shall be removed as part of loading. Operators shall not walk on peaked grates. To eliminate the need for peaked grates, consider erecting a permanent screening device (Grisley) for loading trucks.

Disabled Vehicles

If a DOT vehicle becomes disabled, park it in a safe area as far off the pavement as possible and turn on flashers. The vehicle should be positioned so it does not induce other vehicles to "follow" it. Flares or other emergency warning devices must be placed at least 200 feet to the rear to warn oncoming traffic. Where sight distance is limited, a warning device must be placed 300 feet from the vehicle.

In general, a disabled private vehicle shall not be towed by a Department vehicle. The operator shall call the supervisor and report the situation. In imminent danger situations, such as a serious accident or blizzard conditions, special actions may be necessary to prevent additional risk to property or life.

Emergency Repairs

Never make repairs unless qualified. Call the supervisor for assistance. Set the parking brake and use flashers and other warning devices to increase visibility. When exiting the vehicle, check carefully for traffic, then exit as quickly as possible and close the door. Have proper cold weather and personal safety gear in the vehicle.

Safety Assurance

Managers and supervisors should take every precaution to protect the safety of all employees during snow and ice operations. Field supervisors should periodically check on the condition of personnel, and if in the supervisor's opinion an employee needs assistance, appropriate action should be taken to ensure his or her safety.

Employees should have at least a half hour for meal breaks, and two meal breaks in a 16 hour period. Employees should be allowed to have hot beverages at their work location.

U-Turns

Operators should avoid median crossovers and U-turns whenever possible. However, many U-turns are required to be plowed for emergency vehicles and are the normal turnaround location for snow and ice beats. Generally, prior to the U-turn, a deceleration lane is provided for safe access. Operators must use reasonable judgment, signal their intention to turn well in advance, but in most cases proceed to a ramp, interchange or adequate parking lot where a safe turn can be made. Weather conditions and traffic should be considered before making the U-turn.

OPP Applicability and Exceptions

OPP shall be used to the maximum extent as reasonably and safely as possible. The only recognized OPP beat exception is for communication dead spots. Cellular phones are an acceptable form of communication. A true communication dead spot, for the purpose of assigning a second person to the truck, is 15 continuous minutes or more without communication contact. A map of communication dead spots should be kept in each vehicle. When a vehicle is operated outside its normal assigned route, the operator should have a map designating dead spots.

Exceptions

Some operational and weather conditions shall require two people to be assigned to a vehicle. The following are such conditions:

- Benching or shelving operations on the shoulder
- At unstaffed locations if there is no communications or if a large or medium size loader is not available. If communication and/or a large or medium size loader are present, an OPP operator is allowed to load the truck providing he or she is trained and eventually certified. Loading with a small loader requires two employees if observers are not available. When loading alone, the operator must communicate by radio with another Department employee when exiting and re-entering the truck.
- Where vehicle traffic volume is extremely high, and the right wing is attached. In most

locations, this should be for a short duration.

- Certain road characteristics, traffic volume, population density and physical features may warrant exception to OPP operation. Where installation of tire chains is likely or the passenger window is likely to be covered with snow or ice; clearing snow and ice from ramps and intersections; a limited number of beats in congested areas; or if the personal safety of the operator is jeopardized, two people may be assigned.

Length of Continuous Duty

Employees shall not routinely work longer than 16 hours of continuous service (including two, 1/2 hour meal breaks). After 16 hours, employees must have 8 continuous hours off before returning to duty. Employees shall not routinely operate more than 12 hours (within the 16 hours of continuous duty) in the OPP mode. With supervisory approval, an operator may elect to operate up to 16 continuous hours in the OPP mode. Due to emergency, there may be a need to temporarily suspend these rules.

SPECIFIC PLOWING OPERATIONS

Bridges - When plowing a bridge that crosses another roadway or railroad, care must be taken not to plow snow over the bridge rail onto the roadway or railroad below. When approaching a bridge, slow down and be careful that the angle of the plow is not the same as the bridge joint.

Crossovers, Turnarounds and Gore Areas - Should be plowed after the storm is over and other elements of the highway have been cleared. These should be done when visibility is good and traffic is light. Some operations may require additional maintenance and protection of traffic, especially when a loader is removing snow.

Railroad Crossings - When approaching a railroad crossing while plowing, stop equipment a short distance before the tracks. Raise the plow and wing slightly. After checking both directions for oncoming trains, clear snow, earth, ice, frozen materials and other obstructions from the crossing to the extent possible.

TOW PLOWS

Operator Requirements

Tow Plow Operation

Tow plow use is considered to be a form of One Person Plowing (OPP). The tow plow unit, because of the combined truck and tow plow length requires a CDL Class A. Therefore operation of the tow plow in a non-training status requires:

- OPP Certification
- CDL Class A

- Completion of tow plow training
- If a left wing is used, the Double Wing Certification is required.

Safe Operation

As with any equipment, safe operation is required. Under the provisions of TMI 11-02, (or subsequent revisions) OPP certification will be suspended or revoked if the operator is judged to be operating in an unsafe manner. This policy applies to OPP operations regardless of whether the plow truck is using a wing, two wings, or a tow plow. In the case of OPP using a tow plow any blatant misuse of the equipment or reckless operation in the opinion of the supervisor or manager will be grounds for OPP suspension and an evaluation by the review committee. During the (up to 5 business day) evaluation period the operator may be allowed to operate OPP with wing(s) at the discretion of the residency manager. If the review committee finds that there are grounds for suspension or revocation of the OPP certification then the appropriate action as established in TMI 11-02 (or subsequent revisions) will be taken. Among various possibilities the committee might find that OPP operation is adequate but that specific additional tow plow training is needed before OPP operation with the tow plow is allowed again.

Tow Plow Use

Beats and Turn Around Locations

Based on the experiences of the NYSDOT pilot tow plow program and the information other states have issued concerning their tow plow use, in most cases tow plows may be used in the following types of highway situations:

- Expressway, divided highways, and parkways where echelon plowing has been previously preformed successfully and safely.
- Conventional highways with sections of auxiliary lanes (i.e., climbing lanes, turn lanes, bump outs, parking lanes, etc.) where the tow plow can be deployed and retracted as needed.
- After storm or during storm shoulder plowing on conventional or divided highways. The tow plow may not be operated on any shoulder that is not able to support the weight of the unit.
- Certain ramp and round-about configurations may provide opportunities for use if traffic volumes do not interfere with the operation.

Conditions where Tow Plow use is not recommended

Tow plows are not to be used in the following situations:

- If the manager, supervisor or operator determines that visibility is or is likely to become too low due to blowing and/or extremely high snowfall rates. If there is a loss of visibility during tow plow operation the operator shall retract the tow plow. During white out conditions the operator should pull off the highway at the nearest safe location and radio the situation in to the residency.
- If traffic has aggressive behavior that will require the operator to commonly delay the deployment or retraction of the tow plow except if traffic is being controlled, such by an echelon pattern or a police escort.
- On unstable shoulders.
- Any other location as deemed by both the Resident Engineer and the Regional Director of Operations/Regional Maintenance Engineer to be unsuitable due to operating conditions or highway geometry.

Turn around locations shall meet the following criteria:

- Are to be pre-approved for tow plow use by the Resident Engineer.
- Are to be test driven during dry conditions.
- Shall be improved as necessary to allow safe maneuvering by the unit.
- Must have ample sight distance at the entry and exit points.
- Must have ample space to fully accommodate the tow plow/truck combination without encroaching on a roadway.
- Exit and Entrance ramps at expressways should be used when practical and safe.

VEHICLES AND EQUIPMENT

Safe Operating Condition

DOT vehicles are not required by Vehicle and Traffic Law to display inspection stickers. However, it is Department policy to meet inspection requirements. When the truck is equipped for and actually engaged in snow and ice operations, some relaxation of the policy may occur. During routine operation, it is Department policy to have up-to-date inspection stickers on all vehicles.

An operator must use sound judgment in assessing the road-worthiness of any vehicle. If, for example, one high beam or one taillight is not working, the vehicle is not unsafe because other truck lights have similar functions and are working. However, if the brakes are out of adjustment, or the wipers do not work and it is snowing or raining, the truck is unsafe to operate.

Reasonableness requires the operator to check with the supervisor and mechanic whenever the question of an unsafe vehicle exists.

Large Dump Trucks

Department policy and Federal regulations require large dumps be inspected prior to and at the end of each shift. Before driving the vehicle, the driver shall:

- Be satisfied that the vehicle is in safe operating condition.
- Review the previous vehicle inspection report. If it is not in the vehicle, report it to the shift supervisor.
- Initial the report only if deficiencies noted by the last operator were corrected.
- Report pre-operational check deficiencies on an EM-3.
- Use R-297g to also note deficiencies.
- Use CDL Seven Step Inspection Method (in the NYS Commercial Driver's Manual) during walk around inspection (including a brake test).

Front Plows Shall Be Inspected For:

- Damaged, broken, loose or missing bolts or other parts.
- Presence and condition of all pins, and proper location of lock pins.
- Properly adjusted and sound lift bridle chains.
- Presence, condition and adjustment of push frame shoes (one way plow only).
- Presence, condition and mounting of springs.
- Condition of hydraulic lines (reversible plow only).
- Excessive wear, missing bolts and proper adjustment of cutting edges.
- Presence and condition of plow markers.

Wing Plows Shall Be Inspected For:

- Damaged, broken, loose or missing bolts or missing parts.
- Condition of front tower mast cable and sheaves.
- Condition of "D" block assembly.
- Condition and adjustment of the spring.
- Presence and condition of hinge pin.
- Presence, tightness and condition of "D" bolt.
- Proper size castle nut and presence of the cotter pin and flat washer.
- Condition of cutting edge and moldboard, proper bolts, missing bolts and bolt tightness.
- Condition and adjustment of push arms or braces, proper spring tension and location.
- Presence and condition of all pins and bolts. (Do not use locking pins for other than benching or shelving).
- Condition of rear lift assembly, presence and condition of cable, clamps, pins, crane arms and sheaves.
- Presence and condition of safety chain. When truck is parked, the safety chain must be hooked, or the wing on the ground.
- Presence and condition of plow shoes.

Material Spreaders Shall Be Inspected For:

- Condition of ladder.
- Presence and tightness of all tie downs.
- Position of tailgate latches.
- Proper function and appearance of gate mechanism.
- Obstructions in the chute, presence and location of the deflectors (flaps), presence and location of chute baffle(s), and condition of spinner.
- Slack in conveyor chain.
- Secure mounting and coupling tightness on application rate sensor.
- Leaks in gear box and motor.
- Abrasion points in electric lines.
- Proper connections, leaks, abrasion points, and interference with rear visibility of hydraulic lines.
- Condition of Dickey John electrical connections.
- Proper disconnection of dump body hydraulic lever. If applicable
- Proper function of all components during stationary unloading.

Specialized Features

All large dump trucks are equipped with specialized features to make the operator's job easier and safer. In some instances, modifications to originally installed equipment may be necessary, and require approval by the Office of Fleet Administration & Support. Following is a list of specialized features, their purpose and operational guidelines on large dump trucks.

In-Cab

All controls must be readily accessible to the operator and properly labeled. There should be uniformity in location of "add on" controls, as operators must operate different vehicles. Right wing plow control levers must be located in the center of the cab for access by operator and winger. Seat belts and shoulder harnesses must be worn.

Defroster, heater and ventilating system must be properly working. Pre-season inspection and repair should be done. Operators must learn cab characteristics in each truck to achieve ideal ventilation and air flow. Slightly opening the driver's side window and the curb side vent window may reduce fogging. Proper adjustment of heater and defroster controls will reduce condensation and increase visibility.

Truck Exterior

Spot lights located on the roof may be focused ahead to the center of the lane or on the right shoulder to provide increased visibility. Operators should avoid "blinding" oncoming motorists. A spot light is located on the right front wing tower to illuminate the right shoulder ahead of the truck.

An 8" convex mirror is located on the right wing tower to provide greater visibility of the wing plow and determine proximity to other vehicles on the right, and helps eliminate the right side blind spot.

A heated "West Coast Mirror" is located on the right side of the truck. Newer trucks have heated mirrors on both sides.

Halogen seal beams are installed in the upper plow lights and shall be adjusted to conform to applicable headlight aiming standards.

Other truck lights, including beacons, truck headlights, hopper and lower wing lights shall be working. Four way flashers shall not be used during plowing or spreading operations.

Wiper blades should be checked for arm spring tension and replaced as needed. Winter blades should be available. Windshields should be inspected for defects that could hinder visibility.

High visibility plow and wing markers shall be installed. Durability of these devices can be improved by sealing the exposed end.

Rubber deflectors shall be on the front of the plow to reduce snow blow over.

A grab chain hook shall be on the lower outward portion of the wing plow to allow the operator to hook the wing safety chain from the ground.

To reduce glare, the hood should be a flat blue and the inside of the wing towers and cross braces should be flat black. The rear top one-third of the front plow should be flat black or blue. Wing plows should be painted yellow.

Tailgate Removal and Installation

Proper installation and removal of a truck tailgate requires two employees, and a front-end loader with a lifting loop welded to the top center of the bucket, and a loop welded to the top center of the tailgate. A lifting chain of proper size will be used with hooks with safety latches at both ends, or a chain with one grab hook and one hook with safety latch. The chain should be short enough to avoid hitting the bucket cutting edge while the tailgate is suspended from the bucket, so the bucket does not have to be rolled back to the tailgate to clear the truck. Chains should be long enough to allow the operator to see under the bucket. Appropriate safety gear must be worn by all employees involved in this task.

Removal

The chain is locked to the lifting loop on the bucket. If a grab hook is used, the end of the chain with the safety latch should be fastened to the bucket. Unlock the tailgate and unhook the tailgate chains.

The driver enters the box, using the truck ladder to direct the loader operator into position. The driver must be sure the loader operator can clearly see him or her.

The driver securely connects lifting chain to loop on the tailgate. The bucket is raised enough to place tension on chain and hold the tailgate steady.

The driver removes cotter pin and tailgate pin on one side, requiring safety glasses when using a hammer to free the pin. Opposite side pins are removed.

Once both pins are removed, the bucket controls tailgate movement. The driver should keep fingers and hands clear, and be sure he or she has good eye contact with the loader operator. If operator cannot see the driver, the operator must stop until eye contact is established.

The tailgate is removed from the truck and stored in a tailgate holder stand or other storage area.

Installation

The driver hooks the chain to the loader bucket hook, and connects the other end of the chain to the hook on the tailgate. The driver must be clear of tailgate and loader, before directing loader operator to lift the tailgate and move toward the truck.

From the ground, the driver guides tailgate into position, keeping out from beneath the tailgate.

With tailgate in position, the driver enters the truck box, and makes sure the loader operator can see him or her and the driver's directions.

When tailgate is properly positioned, and tension is still on the chain, the driver replaces pins, wearing safety glasses if a hammer is needed.

Tailgate chains are fastened. The lifting chain is removed from the loop on the tailgate, and from bucket loop while standing on the ground.

Hopper Installation

- Remove tailgate in accordance with tailgate removal procedure.
- Install spreader in dump body. Be certain faces of positioners are against the front and sides of dump body.
- Attach and tighten four tie down hooks.
- Lock dump body tailgate latch.
- Install front and side overlap deflectors. Check for proper position.

- Remove clevis pin from dump body hoist lever handle.
- Connect all electrical and spreader control wires.
- Check to see that all functions are operating properly.
- Connect all hydraulic hoses. Check for leaks, cracked hoses, etc.

Hopper Removal

- Check that all hydraulic hose lines are disconnected.
- Cap all couplings.
- Disconnect all electrical and spreader control wires.
- Make sure all tie down hooks are free.
- Check all welds on lifting eyes.
- If racks are not available, and a crane must be used for final removal, carefully inspect all chains or wire rope, and make sure they are properly secured to the hopper.

Arrow Panels for Snow and Ice Operations

Use of the flashing arrow during routine snow and ice operations can send a misleading message to the traveling public and is generally prohibited. Flashing arrows are intended to provide advance warning and directional information where traffic must be shifted from one lane to another. They are used for lane closures, roadway diversions, and slow moving maintenance activities. For snow and ice operations, the indicated lateral shift of traffic from one lane to another by a flashing arrow is inappropriate.

On a multi-lane highway, where the driving lane is being cleared first, a flashing arrow sends a message to motorist that it is safe to use the passing lane(s). Since the passing lane(s) are not cleared, the flashing arrow is directing traffic into unplowed roadway. Without a flashing arrow, motorists who pass a plow truck do so on their own.

There are occasional instances when a truck-mounted flashing arrow panel enhances the visibility of the plow truck and provides a safe, clear message to motorists. For example, when a truck occupies part of the travel lane and is clearing shoulders, benching, shelving and winging back. Material spreading as a spot treatment in the driving lane where the passing lane is clear or vice-versa may also be an appropriate application for a flashing arrow panel.

RADIO COMMUNICATION

An OPP operator is required to be in communication periodically with the base station or another Department vehicle with a mobile radio or cellular phone. Operators shall report their location/condition at least once during each pass along their section of highway. The Resident Engineer is responsible for developing any additional procedure for periodic communication. (Cell phone operation while in motion is prohibited.)

The OPP operator must report via the radio or cellular phone when exiting and re-entering the vehicle for any reason during snow and ice operations. Operators should report any unusual

and/or potentially unsafe conditions, for example, an accident. As a general rule, "when in doubt, report." On a snow and ice route with known communication dead spots, the operator must call the base station or another DOT radio prior to entering and after exiting the dead spot.

Basic Transmitting Requirements

Before using the mobile radio, think about what needs to be said, stay calm and be accurate. Key the microphone and wait 3 to 4 seconds before speaking. Speak across the microphone in a normal voice. Mention the person or place being called first and the vehicle ID last. Allow the person or location called time to answer before calling again. Never "go out of service" without notifying dispatch of location and length of time expected to be "out". Never interrupt others unless it's an emergency. If radio silence is requested, stay off the radio until the emergency situation is resolved. Radio conversation is not private. The public can hear you. Keep messages brief, work related and professional.

To contact a Regional dispatch point, use the Residency channel. To communicate with any mobile operator within the Residency, use the Residency talk around. To communicate outside the Region, use the state wide channel.

Radio Dispatch

The radio dispatcher controls base, fixed and mobile communications and is in the central location where information is received/sent. The dispatcher's first responsibility is to quickly respond to mobile operators and to give them efficient service. Additional instructions concerning radio operation and procedure are outlined in the Dispatcher Operating Manual.

The dispatcher must never leave the radio unattended without first notifying field units or the shift supervisor that the radio will be out of service.

A dispatcher or supervisor is required to be in radio or phone contact any time OPP operations are conducted. Either the shift supervisor or another qualified employee should serve as a dispatcher. In limited cases, shift supervisors can act as the radio dispatcher on their mobile radio.

The dispatcher shall use the revised radio log R241A to document radio transmissions anytime OPP operators enter and leave documented communication dead spots.





Appropriate action should be taken by the dispatcher through the shift supervisor if the operator fails to check in after notification of leaving the vehicle or entering a communication dead spot. The dispatcher should log the time of notification of the shift supervisor and continue to call the vehicle periodically until contact is made with the operator, or until the situation is otherwise resolved

FIRE PROTECTION & FLAMMABLES

NYS UNIFORM FIRE PREVENTION AND BUILDING CODE

The Department of Transportation shall conform to the NYS Uniform Fire Prevention and Building Code as it applies to all occupied and unoccupied structures with respect to facility inspection, construction permits, and compliance with all fire safety regulations. This compliance program is overseen by the Employee Safety and Health program, and administered regionally by Regional Safety and Health staff (Regional Fire Code Coordinator).

CLASSIFICATION OF FIRES AND FIRE EXTINGUISHERS

Fire Class	Description	Identifying Symbol	Extinguishing Agents
"A"	Ordinary combustible materials; cloth, paper wood, plastic.		Water Solutions with foam & water Dry Chemical
"B"	Flammable liquids; grease, oil, paint, gasoline		Foam Carbon Dioxide Dry Chemicals Clean Agent
"C"	Electrical equipment		Carbon Dioxide* Dry chemicals Clean Agent
"D"	Combustible Metals and Metal Alloys		Super D (Sodium Chloride) G-plus (Graphite)

*Carbon dioxide extinguishers with metal horns are not safe for use on electrical fires.

EXTINGUISHERS

If you are appropriately trained, use the correct extinguisher for each type of fire. The wrong extinguisher may spread the fire and be dangerous to the operator. A sticker must be attached to each extinguisher showing the type of fire for which it is intended. The number and size of extinguishers depend on the nature of the fire hazard.

Personnel must read the extinguisher label and become familiar with its operation. Periodic fire extinguisher training will keep personnel familiar with extinguisher operation.

Maintenance and Inspection

Extinguishers should be checked every month by a building representative for damage, deterioration, check gauge, seal and pin, make sure extinguisher is visible and accessible. An inspection tag must be attached to every extinguisher, and must be initialed and dated by the inspector after each inspection.

Extinguishers should additionally be inspected annually by a qualified inspector.

Using an Extinguisher

Sound the alarm. Make sure everyone knows there is a fire.

Evacuate all nonessential occupants.

Call the Fire Department or assign someone to do it for you.

Make sure it is safe to attempt to extinguish the fire and the fire isn't too big.

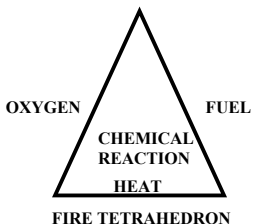
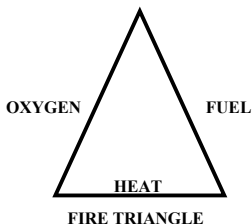
Use the PASS method when using the fire extinguisher.

P- Pull the locking pin.

A- Aim the nozzle at the base of the fire.

S- Squeeze handle.

S- Sweep side to side motion.



FLAMMABLE LIQUIDS

Storage, handling and use of flammable liquids must be by or under the supervision of trained personnel.

Sources of ignition are prohibited in areas where flammable liquids are stored and used.

Warning and "NO SMOKING" signs must be posted.

Rubbish, brush, long grass, or other combustible material shall be removed from immediate areas where flammable liquids are stored or used.

Spills of flammable liquids shall be cleaned up immediately.

Electrical lighting is to be the only means used for illumination in areas where flammable liquids, vapors, fumes, dust, or gases are present. Globes or lamps are not to be removed or replaced, nor repairs made on the electrical circuits until the circuit has been de-energized and properly locked out.

Transport of flammable liquids must be in approved containers and labeled. Drums and other flammable liquid containers must be kept tightly capped. This applies to empty and filled containers at all times.

Buildings, shops, or rooms where flammable liquids are handled or stored require self-closing metal refuse containers.

Storage tanks of flammable liquids must be electrically bonded and grounded, and equipped with proper relief vents. Tank vents must not be located close to open flames, heating apparatus, or any other source of ignition. Water draw-off valves must be antifreeze type or insulated to prevent freezing. Dispensing outlets from storage tanks above ground must be equipped with quick-closing valves. Tanks, hoses, and containers involved in transfer of flammables must be kept in metallic contact.

Smoking or the use of open flame within 50 feet of where flammables are used or stored or where equipment is fueled is prohibited.

Fueling - The ignition shall be turned off on all vehicles and equipment during fueling. Smoking is prohibited near fueling stations. "No Smoking" signs shall be posted. The operator shall not leave the vehicle/equipment unattended while being fueled.

Transportation of Flammables - Handling of flammable liquids in portable containers shall be in approved and labeled safety containers, not to exceed 5 gallon capacity. Portable containers used for refueling gasoline powered equipment shall be metal and of the safety can type. Flashback shall be prevented by a mesh flame arrestor screen inside the spout with a spring-loaded cap that closes automatically. Refer to manual section on TRANSPORTATION OF GASOLINE & DIESEL FUEL.

Evacuation Procedures - Evacuation procedures for personnel in case of fire will be provided. Evacuation routes will be posted in all facilities in which DOT employees work. At least two fire drill shall be held annually at all occupied facilities.

Burning Areas - Compliance with appropriate local, state and federal laws must be observed for all burning operations. Employee Safety & Health must be notified 24 hours in advance for all burning operations.

HEALTH HAZARDS

Fire isn't the only danger associated with flammable and combustible liquids. They can be hazardous to your health.

Avoid skin contact. Most flammable and combustible liquids remove oils from skin and cause irritation, cracking, rashes, or infection. Wear protective gloves and aprons to avoid skin contact. Wash liquids from skin with non-abrasive soap or hand cleaner.

Don't breathe vapors. Avoid breathing vapors and use flammable and combustible liquids only in a well-ventilated area. If ventilation is not possible, use a respirator.

Eye Protection. Wear chemical splash goggles when pouring flammable or combustible liquids. If spraying or if there is a chance of liquids splashing in the face, a full face shield must be used in addition to goggles.

Employees splashed with a harmful or a burning liquid may not be able to help themselves. Chemical splashes and burns can be very painful. Employees must depend on co-workers for help in an emergency. If someone is splashed, flush the area with water for at least 15 minutes, and remove contaminated clothing while flushing. Get medical attention immediately.

Eye wash equipment must be readily available when the possibility of splashing chemicals exists.

HAZARDOUS MATERIALS

Most chemicals have some inherent toxicity and hazard and when treated carelessly are a health threat to workers, the environment and the community. Properties of chemicals and their reactions are complicated. Safe handling of chemicals requires training, proper equipment, and prudent practices.

ROUTES OF ABSORPTION

There are three (3) common routes for entry of toxic substances into the body; inhalation, absorption, and ingestion.

Inhalation is the major and most important route of entry because of the large quantity and rapid manner which toxic material may be absorbed into the lungs, pass into the bloodstream, and reach the brain. Airborne contaminants encountered in Transportation operations include gases like carbon monoxide; fumes like those from asphalt, diesel exhaust and welding; aerosols like spray paint.

Skin offers a good barrier to chemicals. However, there are many compounds that can be absorbed through skin. Solvents that are good at cleaning petroleum based greases and paints like toluene and xylene can be absorbed through the skin. (Never use gasoline or solvents to wash-up.) Some substances like lead oxides can enter the skin by way of hair follicles. Finally many substances like phenols can produce direct poisoning by contacting the skin.

People in the workplace can unknowingly ingest harmful chemicals when eating, drinking, and smoking. Toxic compounds like lead and other metals are capable of being absorbed from the gastrointestinal tract into the blood. Toxic dusts may also be problematic.

HAZARD COMMUNICATION

There are approximately 40,000 chemicals used in the nation's workplace. To ensure employees receive basic information and training; take appropriate precautions; and wear appropriate personal protective equipment, the New York State Public Employee Safety and Health Unit (PESH) enforces the OSHA Hazard Communication Standard and NYS Right to Know Law. These laws require a written program, posters displayed, material safety data sheets, labeling, training and record keeping. These regulations apply to chemicals that can present physical and/or chemical health hazards.

Physical hazard means the chemical is a combustible or flammable liquid, a compressed gas, explosive, or is unstable, reactive or water reactive. A health hazard means the chemical can cause either acute or chronic health effects in employees.

Each workplace must have a written hazard communication program, and specifically contain:

- List of the hazardous chemicals known to be present, using the name that appears on the safety data sheet.
- Method used to inform employees of the hazards of routine and non-routine tasks.
- Method used to inform contractors working in the workplace of hazardous chemicals that their employees may be exposed to, and suggestions for appropriate protective measures.

Each workplace must have posted a NYS Department of Health Right to Know Poster. Each poster must indicate name, location and phone number of a Department of Transportation contact person who has knowledge of the written program.

Each container of hazardous materials in the workplace must be labeled, tagged, marked or otherwise identified with:

- Identity of the hazardous chemical(s).
- Appropriate hazard warnings.

Labels are not required for chemicals that are transferred for immediate use (within 24 hours) by one employee.

Safety Data Sheets must be available for each hazardous chemical. The chemical manufacturer, distributor or importer is responsible for producing a safety data sheet that contains:

- Name used on the product label.
- Chemical and common name of the substance(s).
- Physical and chemical characteristics and hazards.
- Health hazards, including symptoms, and medical conditions that may result from exposure.
- Primary routes of entry.
- Exposure limits.
- Whether material contains more than 0.1% of a carcinogen.
- Precautions for safe handling, use and control measures, such as personal protective equipment or engineering controls.
- Emergency and first aid procedures.
- Date of preparation.
- Name, address and telephone of firm or person, preparing or distributing the safety data sheet(s).

Employees must receive training annually and whenever a new chemical is introduced, including:

- Requirements of hazard communication standard.
- Locations where hazardous materials are used.
- Location and availability of written program, list of hazardous materials, and Safety Data Sheets.
- Methods of observation (such as monitoring, appearance, and odor) used to detect presence of a chemical.
- Physical and health hazard of the chemical(s).
- Measures employees should use to protect themselves.
- Labeling system.
- How to read Safety Data Sheets.

CONTROL AND STORAGE

Once hazardous materials are identified, controls must be established for their purchase, storage, distribution, and use. Purchase intelligently. Disposal costs may exceed purchase cost. Don't order a 55-gallon drum when only a small quantity is needed. Keep track of how much was used, and when. Increased quantities of hazardous materials increase risk of exposure and spills.

Safe storage facilities are important. Injuries can occur from container leakage and incompatibility with other commonly stored materials. All storage areas should be clean and well lighted. Containers must be closed and labeled. Aisles should be wide enough to permit safe materials handling. Strong oxidizers, flammable and explosive substances, and corrosive materials must be separated and assigned special storage areas. Compressed gases like acetylene and oxygen must be kept at least 20 feet apart, or separated by a five-foot high noncombustible barrier.

The amount of a hazardous material stored at a location depends on:

- Building design, construction, and occupancy. Buildings designed as storage facilities and not otherwise occupied are allowed the greatest quantity of storage.
- Relative hazard of the material.
- Type and size of storage container.
- Availability of ventilation, fire extinguishers and drains.

Refer to manual section on FIRE PROTECTION & FLAMMABLES.

DISPOSAL OF HAZARDOUS MATERIALS

Hazardous and other contaminated wastes are typically disposed of by specialty disposal contracts. Refer to the Environmental handbook for Transportation Maintenance or the Regional Landscape Architecture/Environmental Services Unit for detailed information on waste management and disposal requirements for specific waste items.

GLOSSARY OF HAZARDOUS MATERIALS TERMS

Asphyxia - suffocation from lack of oxygen.

Anaphylaxis - hypersensitivity resulting from sensitization following contact with chemical or protein.

Biological agents - living organisms that cause disease, sickness and death in humans.

Blister agents - substances that blister the skin.

Blood agents - substances that interfere with cellular respiration exposure by inhalation.

Choking agents - substances that cause physical injury to the lungs.

Combustible liquid - liquid with flash point greater than 141°F and below 220°F.

Cryogenic liquid - refrigerated liquefied gas that has boiling point colder than -130°F.

Dangerous water reactive - substance/chemicals that produce significant toxic gas when in contact with water.

Decomposition products - chemical or thermal (heat) break down products.

Decontamination - removal of contaminated material to prevent adverse health effects. Contact the manufacturer or hazardous material responder for information. Contaminated clothing or equipment should be removed and stored in controlled area until appropriate clean-up or disposal.

Dry-chemical - preparation designed for fighting fires involving flammable liquids, pyrophoric substances and electrical equipment (common types are sodium bicarbonate or potassium bicarbonate).

Edema - accumulation of fluid in cells and tissues. Pulmonary edema is buildup of water in lungs.

Flammable liquid - liquid with flash point less than 141°F.

Hot zone - area around hazardous materials incident which is contaminated and can produce adverse health effects.

IDLH - immediately dangerous to life and health.

Immiscible - does not readily mix with water.

LEL - lower explosion limit of flammable gas expressed as a percent of gas in air by volume.

Miscible - mixes with water.

Non-polar - same as immiscible.

Noxious - harmful or injurious to health.

Oxidizer - chemical which supplies its own oxygen and helps combustible material burn more readily.

Oxygen deficiency - an atmosphere with less than 19.5% oxygen.

PEL - permissible exposure limit to airborne contaminants that is published and enforced by OSHA as a legal standard.

pH - represents the acidity or alkalinity of water. Pure water has pH of 7. pH of 1 is extremely acidic. pH of 14 is strongly alkaline (base). Acid and alkaline materials are commonly referred to as corrosives or caustics.

Polymerization - chemical reaction generally associated with plastics in which individual molecules form long chains.

Pyrophoric - a material which unites spontaneously upon exposure to oxygen.

STEL - short term exposure limit employee can be exposed to for 15 minutes.

Thromb - a blood clot.

Teratogen - a substance causing defects in developing fetus.

UEL - upper explosion limit of flammable gas expressed as a percent of gas in air by volume.

Virulent - extremely poisonous.

Viscosity - measure of a liquid's internal resistance to flow.

TREE WORK

WORK ZONE PROTECTION & TRAFFIC CONTROL

When necessary for tree crew vehicles to occupy the pavement or shoulder, all appropriate work zone protection specified in the National Manual on Uniform Traffic Control Devices (MUTCD) and the Department Work Zone Traffic Control Manual (WZTCM) shall be required. When work is over streets, sidewalks, or other areas of pedestrian and/or vehicle traffic, special care shall be taken to protect such areas, even though the pavement, shoulder, or sidewalk itself may be blocked off.

BUCKET TRUCK OPERATIONS

Refer to manual sections on AERIAL LIFT DEVICES and FALL PROTECTION.

CLIMBING & IN-TREE WORK

Work signals shall be clear and understood among supervisor, climber/pruner, and ground crew. A work plan or discussion about what is being accomplished should take place among the crew members before starting work.

Climber/pruner shall be aware of ground crew and presence of pedestrians, vehicles, utility lines, etc. at all times. In locations where work is restricted by pedestrian and/or vehicle traffic, tag lines shall be used to lower limbs. All requirements of the Department's policy on WORKING NEAR ENERGIZED LINES AND EQUIPMENT shall be followed (refer to section in this manual).

- Climber/pruner shall be secured by an approved climbing line or harness at all times when climbing.
- Harness, safety rope, climbing irons and other hardware that may be used for climbing shall be inspected before each climb. Any equipment found to be defective shall be repaired prior to use or discarded.
- Climbing safety lines will only be used for climbing purposes, not for lowering limbs, directing the fall of a tree or any other purpose.
- A friction knot such as a taut line hitch or other approved knots shall be used for descent. Two figure eight stopper knots shall be tied, one at the ground end and one at the tail end of the safety line to help prevent knot failure.

Tools shall be raised with a tag line. Tools shall not be thrown from the tree to the ground. Ground crew shall stand clear from tools being raised or lowered. Tools shall not be raised or lowered over electrical wires. Climbers/pruners shall always climb with a rope utilizing fall protection restraint (mechanical) or other methods to climb the tree.

Tree crew shall comply with Department policies regarding hard hats and high visibility apparel,

work clothing guidelines, safety footwear and personal protective equipment, all referred to in this manual. Tree crew shall conform to OSHA safety footwear requirements.

SAFETY ROPES

Climbers/pruners shall use an approved climbing line while climbing. A figure-eight (stopper knot) will be tied at the ground end of the safety line to prevent the rope from pulling thru an approved knot when descending. A safety sling shall be used for all climbs above 8 feet secured by an approved knot. A safety sling shall be tied as high, and as close to the trunk as possible.

Tight crotches in which rope will bind shall be avoided. The rope shall be run through the crotch slowly to prevent burning. After rope has been crotched, the climber/pruner shall check the entire length of the sling and before swinging free. The approved knot shall not be removed before the climber/pruner is out of the tree. The climber/pruner shall stay in the safety sling until on the ground.

Rope shall be inspected for cuts, abrasions or other signs of wear before using. If defective in any way, it shall be removed from service and discarded. Avoid kinking new rope by uncoiling from inside the coil. Rope not in use shall be kept coiled. Knots shall be removed at the end of the work day. Ropes shall be stored in a dry location to avoid mildew and rot. Ropes shall not be exposed to chemicals, flame or excessive heat, nor allowed to freeze.

Manufacturer specifications shall be followed for working loads, and for care and maintenance of ropes. A working load chart for various ropes and climbing lines shall be available for crews to reference.

HAND TOOLS

All sharp-edged tools not in use shall be sheathed or otherwise protected. Only hand saws, toothed on one edge shall be used. Teeth shall be properly set and kept sharp. Hand saws shall be sheathed and attached to the climber's/pruner's belt while climbing. Wedges shall be kept free of burrs, and only driven by sledge hammer.

POLE SAWS AND PRUNERS

Pole saws and pruners shall be as lightweight as possible and long enough to allow the trimmer to readily reach the work. Saws and pruners shall be raised and lowered by a rope tied below the blade or head. Saws and pruners should not be hooked over limbs or in crotches, hung on a wire, or used for lifting other equipment as they can be hit by the lowering of material.

CHAIN SAW SAFETY

Operation of chain saws is inherently hazardous. Potential for injury can be minimized by use of proper personal protective equipment (PPE) and safe operating procedures. This Safety Bulletin addresses OSHA requirements for PPE and safe operating procedures for chain saw work. Also refer to appropriate program safety manuals for additional information.

Program managers and supervisors are responsible for implementation, administration, and enforcement of this policy, with technical assistance from Employee Safety and Health.

Policy

Employees and supervisors shall be trained in the safe operation and maintenance of chain saws. All tree crew members shall have CPR/First Aid training. For all other operations involving use of chain saws, it is strongly recommended that at least two people in the crew be knowledgeable in First Aid/CPR. Employees shall follow all manufacturer and Department safety procedures. All appropriate PPE shall be used by employees operating chain saws, including hard hat; chaps; and eye, face, foot, hand and hearing protection.

Training

All employees shall be trained on chain saw safety prior to the use of a chain saw. Minimally the training shall consist of a review of the safe operating procedures contained in this safety bulletin.

Equipment

All chain saws placed in service shall meet all requirements of ANSI B175.1-2000. Chain saws shall be equipped with at least two separate anti-kick back features. Chain brake, low kick back chain, reduced kick back bar, or nose guard are among current devices available.

Required Personal Protective Equipment

Chaps – Full wrap around leg protection apparel constructed of cut resistant material complying ASTM F1897 - 08 Standard specifications for leg protection for chain saw users.

Foot Protection - Tree crew employees shall conform to OSHA logging standard requirements and Department policy regarding safety footwear.

Hearing Protection - Any approved muff, plug or semi-aural protectors that can be properly worn with other required PPE.

Face Shield - Wire mesh or clear plastic designed for impact protection.

Safety Glasses - Must have side shields and be designed for impact protection.

Hand Protection - Appropriate gloves should be worn, when possible.

Fueling and Starting

Store and carry gasoline in approved safety cans. (Refer to Transporting Gasoline and Diesel Fuel Safety Bulletin.)

Use a funnel or flexible hose fitted to the container when fueling saws.

Clear the area around fueling site of flammable material.

Do not fuel saw with engine running, or start the saw in the same spot where it is fueled.

Allow engine to cool before refueling.

After fueling, wipe chain saw clean before restarting.

Keep a fire extinguisher available when refueling.

Place saw on the ground or other firm surface to start. Make sure chain can not contact ground or other objects.

General Chain Saw Safety

Never work alone with a chain saw.

Never remove nose guard or chain brake.

Chain brake must be engaged while starting.

Keep engine free of saw dust.

Clear away brush, rocks, fencing, etc. in the work area which might hinder movement.

Always establish good footing.

Keep personnel clear from areas of falling trees or rolling logs.

Be alert for nails, wire, metal taps, etc. in trees.

Keep cutting speed under control to avoid cutting too deep or at an improper angle.

When moving with a saw, it should be grasped firmly in one hand and carried at the side with bar pointing backwards. Special caution is necessary when the engine is running.

Chain brake should be engaged during transport.

Look to the side before turning around. Face and hearing protection and engine noise will limit the operator's ability to know if someone is close.

Stop the saw when doubtful about safety.

Secured racks, boxes, bar holsters or sheathing, or other means shall be used for transporting chain saws.

A First Aid kit shall be immediately available.

LIMBING & BUCKING A TREE ON THE GROUND

DO NOT stand on log. Be cautious and aware of stress points and spring poles (whip branches). Avoid "traps" where two sections of log bind or pinch the bar. There are numerous traps, depending on how the log is resting. Often, an undercut will avoid binding. If saw becomes pinched, don't pull or force out! Use wedges or a peavey to move logs or limbs. As a general rule limbs on bottom are cut upward from bottom, limbs on top are cut downward on top.

Hold saw firmly in both hands and ensure good footing. Stand to one side of the saw, not behind it. Clear away brush around the work. Remove limbs from top and sides of log before bucking. Do not allow saw to hit the ground. Clear away stones, earth and bark from area so the chain will not throw them. When working on a slope, stand uphill from the log. Make sure no one is below.

CUTTING BRUSH & UNDERGROWTH

Maintain secure footing.

Keep smooth even pressure on saw. Always choose a reduced kick-back chain for brush cutting. Voids between teeth on chain are filled in, which is where we get the term reduced kick-back.

Cut as low as possible to the ground to reduce tripping hazards.

Keep a safe distance from co-workers.

Remove cut pieces from work area.

Cut parallel to ground (no spikes).

ELECTRICAL HAZARDS

Do not operate any equipment within 10' of electrical lines or equipment. All wires especially those that have fallen, must be treated as live. Trees near or touching wires shall not be worked. (Refer to **Electrical Safety** section of this manual and follow all guidance therein.)

If possible, do not work with back toward electrical wires. When climbing or working in trees, climbers/pruners should try to be in a position so that the trunk or limbs are between their body and electrical wires. Wires, even in moderate wind, will sway causing lines to sag.

Do not drop limbs or branches over electrical wires. If limbs or branches fall across wires stop work immediately, and call the utility. Practice cutting limbs that are shorter than the distance between two wires.

STUMP CUTTER/GRINDER

Follow manufacturer recommendations for operation and maintenance. Before starting work, check the area carefully for underground utility lines. Keep bystanders away.

The machine must be inspected to insure good working condition and that all safety devices and shields are present and working. The machine shall not be operated unless the safety shield and canvass curtain (all safety features) are in place.

Teeth should not contact stones, metal, concrete, etc. which may create high speed projectiles. Investigate each stump, excavating around the perimeter.

When making adjustment or repairs before moving, the machine must be turned off, key removed, and clutch disengaged.

This equipment will be operated off the pavement where possible. If all or a portion of the shoulder or pavement is occupied, proper work zone protection, as specified in the MUTCD and WZTCM, is required.

When in tow, the unit shall be properly secured to the towing vehicle, and safety chains used. The rear of the machine shall have either operating signal lights, or flags on either side. Refer to manual section on TOWING EQUIPMENT.

Crews working with or near the machine shall wear hard hats, goggles or face shield, gloves, and hearing protection. Refer to manual section on PERSONAL HAZARDS AND PROTECTIVE EQUIPMENT.

Fire extinguisher, first aid and eye wash kits shall be readily available.

BRUSH CHIPPER

Follow manufacturer recommendations regarding safe operation and maintenance. Keep bystanders away.

This equipment will be operated off the pavement where possible. When a shoulder or portion of the pavement is occupied, proper work zone protection, as specified in the MUTCD and WZTCM, is required.

When in tow, the unit shall be properly secured to the towing vehicle, and safety chains used. The rear of the chipper shall have either operating signal lights, or flags on either side. Refer to manual section on TOWING EQUIPMENT.

Check tightness of wedge locking bolts and safety brake daily.

Engage clutch carefully to prevent excessive belt slippage. Bring engine to cutting speed after clutch is engaged. Chipper shall remain at idle speed when not chipping.

Crews working with or near the chipper shall wear hard hats, goggles or face shield, gloves, and hearing protection. Refer to manual section on PERSONAL HAZARDS AND PROTECTIVE EQUIPMENT.

Ensure governor cuts out properly before starting to chip each day.

Do not attempt to make repairs or adjustments unless ignition switch is turned off and key removed.

After a blade change or adjustment, test-run the unit and retighten blades.

Do not throw sweepings, stones, nails or foreign material into the unit. Do not force material or attempt to hand feed small pieces of brush. If material does not feed itself, push with another piece of brush or wood stick.

Clean chips from the motor, especially around the exhaust manifold, to prevent fires.

Check for broken, loose or improperly positioned teeth, and the general condition of engine for leaks, loose or missing parts. Inspect slide carriage.

Be sure all safety equipment is working properly.

Fire extinguisher, first aid and eye wash kits shall be readily available.

HERBICIDES

Certification - Employees and supervisors responsible for handling and applying herbicides shall be certified by the NYS Department of Environmental Conservation.

Job Planning - Soap or detergent, and at least 5 gallons of clean water shall be available for emergencies and cleanup. Wear all personal protective equipment necessary. Check labels before using. First aid and eye wash kits shall be readily available. An appropriate spill and absorption kit should be carried.

Transportation - Careless moving of herbicides can result in spills and contamination. Do not carry herbicides in the passenger area of any vehicle. All containers shall be properly and effectively secured.

Protective Clothing - The need for protective clothing depends on the herbicide. The Department generally only uses low toxicity products. The degree of employee exposure is the result of several factors including concentration of formulation, application equipment and duration of exposure, and all necessary precautions shall be followed. The label will provide guidance as to what type of protective clothing/equipment is recommended. Follow manufacturer's recommendations.

Mixing and Filling - Personal protective equipment is important during mixing and filling. Use appropriate chemical goggles, face shield, and a respirator (if specified in the safety data sheet) when handling. Plan application so that only what is needed is mixed. Do not combine herbicides unless the combination is called for on the label. Open packages carefully with a knife or sharp instrument to avoid splashes, spills, or drift. If concentrate is spilled or splashed on clothing, wash and change clothes immediately. If spilled on the floor or ground, clean it up. Some chemicals in the concentrated form will remain in toxic quantities in the soil. Always stand with head well above and to one side of the fill hole.

Equipment - Check all equipment thoroughly before application. Be sure it is working and calibrated correctly. Use the correct nozzles, pressure, and droplet size. Machinery shall be shut down for adjustment or repair.

Anti-siphon devices shall be installed on all spray rigs to prevent back-up of contaminated water into the water supply when using streams, ponds, etc. Stay with the machine when the tank is being filled.

Check for leaks in the pump or tank, and for leaky hose connections and worn spots in hoses that could burst. The spray tank shall have a tight lid to prevent leakage.

Truck Mounted Herbicide Application Equipment - Equipment shall be calibrated to avoid

material drift which can contaminate the vehicle during application. When planning the job it is important to know wind speed and direction. Avoid applications that will allow the herbicide to drift back onto the vehicle. The passenger side window shall be closed whenever herbicides are being applied.

Disposal - Use all the herbicide in the tank. If some is left at the end of the job, spray on other targets at the recommended dosage. Never leave partly filled equipment in the field. For injector systems return unused herbicides by changing the herbicide in the chemical holding tanks back into their original (or other appropriate) container which clearly indicates contents. When the tank is empty, release pressure from application equipment. Close outlet valves. Wash off outside to avoid unnecessary exposure.

Do not leave containers in the field or at the application site. Account for every container used. Safely dispose of empty containers. Partially used herbicides must be stored in tight containers in a locked building. Keep untrained employees out of storage areas.

Clean-up - Practice good personal hygiene including showering daily and hand washing frequently. Spray clothing should be changed daily. If clothes are exposed, keep away from other clothes and from the family laundry. Do not allow children to be exposed to contaminated clothing. Wash spray clothes separately. Do not wash in streams or ponds. Do not take clothes to a commercial laundry without informing the proprietor of the contamination.

PERSONAL PROTECTIVE EQUIPMENT

Gloves - Wear chemical resistant gloves when handling herbicides to protect arms and wrists. Prevent material from running into gloves by keeping sleeves outside gloves. Check closely for holes by filling gloves with water and gently squeezing. Discard gloves if holes exist. When finished spraying, wash gloves with detergent and water before removing.

Clothes - Wear clean, dry work clothes which cover the entire body. After every use, wash clothes with detergent and water. Waterproof apparel provides maximum protection.

Boots - Wear lightweight unlined water proof boots which cover ankles. Put pant legs outside boots. Boots must be washed often and dried thoroughly to remove residues. Additional boots shall be available in case of accidental contamination.

Goggles and Face Shields - Wear tight fitting goggles and a full face shield whenever the chemical could contact eyes, especially pouring or mixing concentrates. Clean frequently.

Respirators - Respirators protect against inhaling toxic chemicals, and shall be worn when more toxic herbicides are mixed and applied. Labels will indicate if respirators are needed. Employees required to wear a respirator must be fit tested and have medical certification to wear the type of respirator required.

Cartridge respirators contain a filter cartridge to absorb toxic fumes and vapors, and are used for short exposure to concentrates, or longer exposure to low concentrations. The respirator must fit properly and snugly to form a tight seal all around the face. Facial hair will not be allowed to interfere with a correct seal. Make sure correct replacement cartridge is used.

Check filter cartridge often. Replace it when it looks dirty, if breathing becomes difficult, or if the odor is detected. Cartridges should generally be changed after eight (8) hours of use. If an odor is present, be sure respirator is sealed properly. If odors persist, change cartridge immediately.

After each use wash face piece with detergent and warm water. Rinse thoroughly and wipe dry with a clean cloth. Store respirator, filters, and cartridges in a clean, dry place away from herbicides and other chemicals.

Refer to manual section on RESPIRATORY PROTECTION.

STORAGE

Use a separate building to store herbicides if possible. If not, store in a wing or corner of the first floor in a cool, dry, ventilated area. Containers should be stored off the floor to prevent dampness. A spill pack shall be readily available near the storage area. Where possible, a dike should be built to contain spills and leaking containers.

All spills shall be reported to the immediate supervisor and Resident Engineer. Spill location and steps taken to clean up will be noted on the applicator's daily report. If a spill cannot be safely cleaned up by the applicator, due to the need for special equipment or personal protective equipment, outside resources shall be sought.

Warning signs shall be placed at every door and window to the storage area stating "DANGER - HERBICIDES, KEEP OUT," and unauthorized entry prohibited.

It is desirable to have windows (with screening) to allow for fire fighting.

A dry chemical fire extinguisher shall be readily available, but outside the immediate storage area. Avoid inhalation of smoke or fumes from herbicide fires.

Storage areas shall be used only for herbicides and related equipment.

Food and drink, eating utensils, and smoking are prohibited in the storage area.

An ample supply of clean water, detergent or soap, and hand cleanser shall be readily available. Absorption material shall be available to soak up spills and leaks.

All containers shall be clearly labeled. Leaking containers shall be properly disposed of and

their contents transferred to suitable containers. Such containers shall also be properly labeled.

HEALTH HAZARDS AND PRECAUTIONS

Avoid Exposure - Do not work in drift, spray or runoff. Do not wipe hands on clothing if chemicals have been spilled on gloves. This will contaminate clothing and may soak through to the skin. Do not blow out clogged hoses, nozzles, or lines by mouth. Never eat, drink, or smoke when handling herbicides. Wash hands and face thoroughly before eating, drinking or smoking. Food will not be carried on any vehicle engaged in herbicide work, or used to transport herbicides.

Employees who feel sick should stop work, get out of the area and seek help. Keep children, unauthorized persons and pets out of the spray area. Use proper spray rates. Excessive application may adversely affect humans, crops and wildlife.

Poisoning - Symptoms of poisoning may result from sudden exposure to large quantities of concentrates, or from continuous exposure to smaller quantities of less concentration over longer periods. Acute poisoning is severe poisoning which occurs after a single exposure. Chronic poisoning results from repeated, small, non-lethal doses over time.

Symptoms may include headache, fatigue, weakness, dizziness, restlessness, nervousness, perspiration, nausea, diarrhea, loss of appetite and weight, thirst, moodiness, soreness in joints, and irritation of nose, throat, eyes or skin.

First Aid - In an emergency, call for medical assistance first, except when alone with the victim. Determine that he or she is breathing, and eliminate further exposure to the poison before leaving to call emergency services. Save the chemical and label for medical responders.

Chemical burns - Wash with large quantities of water. Remove contaminated clothing. Immediately cover area loosely with a clean, soft cloth. Avoid use of ointments, greases, powders, and other drugs.

Eye contact - Wash eye(s) out as quickly and gently as possible. Hold eyelids open, wash eye(s) with a gentle stream of clean water for 15 minutes.

Inhaled contaminants (dusts, vapors, gases) – Carry victim to fresh air immediately or open all doors and windows. Loosen tight clothing. Apply CPR if breathing has stopped. Keep victim as quiet as possible. If seizure occurs, watch breathing and protect from falling. Keep chin up so air passage will remain free. Prevent chilling (wrap in blankets but don't overheat).

Swallowed contaminants – Have Safety Data Sheet available. Call 911 immediately. Call the Poison Control Center 1-800-222-1222, follow their direction on how to proceed.

If Emergency Services cannot be reached – Consult the Safety Data Sheet.

The most important decision about a person who has swallowed a herbicide is whether to induce vomiting. Usually it is best to get rid of the swallowed material fast, except:

- If the victim is unconscious or convulsive. The victim could choke to death.
- If the person has swallowed a corrosive poison -- a strong acid or alkali that can burn the throat or mouth.
- If the person has swallowed petroleum products. The words "emulsifiable concentrate or solution" on the label are signals not to induce vomiting. If a dilute form of these products is swallowed, induce vomiting immediately.

Do not waste significant time inducing vomiting. Speed in getting medical attention is critical. If induced vomiting is attempted, make sure the victim is lying face down or kneeling forward, not on their back.

- Give large amounts of water, up to a quart. Soapy water or strong salt water will cause vomiting.
- Place finger at back of throat.
- Collect some of the vomitus for possible chemical testing.
- Never give anything by mouth to an unconscious person.

First Aid Kit - A well equipped and clearly labeled first-aid kit shall be readily available with tight fitting cover and latch to avoid contamination. An eye wash kit capable of 15 minute duration shall also be available.

In addition to the first aid kit, the following items should be available:

- Small plastic bottle of liquid detergent.
- Salt, used with water to induce vomiting.
- Baking soda or a bottle of Milk of Magnesia, mixed with water to neutralize acids.
- Plastic bottle of lemon juice or vinegar, used with water to neutralize chemicals.
- Shaped plastic airway for mouth-to-mouth resuscitation.
- Gallon container of clean water.
- Band-aids, bandages and tape.
- Blanket kept in a place free of contamination.
- Empty jar with a tight fitting lid as a drinking glass to induce vomiting, and to collect vomitus.

PAVEMENT MARKING

Pavement marking is a specialized operation requiring unique traffic control measures. Number of vehicles, proper spacing, and use of truck-mounted signs and arrow panels must strictly adhere to standards established in the National Manual on Uniform Traffic Control Devices (MUTCD), the Department Work Zone Traffic Control Manual (WZTCM) and Transportation Maintenance policy.

Crew members shall conform to Department policy for high visibility apparel and hard hats. Respirators, gloves, coveralls and eye and ear protection must be available, and used in accordance with Department safety policy. Refer to Safety Bulletins on HIGH-VISIBILITY APPAREL & HARD HATS and PERSONAL PROTECTIVE EQUIPMENT.

Each truck in the pavement marking train be equipped with a fire extinguisher; first aid kit; and an eye wash kit.

Safety Equipment & Procedures

Chemical goggles and face shield, and neoprene gloves shall be worn during dispensing, mixing, hose and spray gun purging, and cleaning operations. Contact the Regional Safety Representative for more specific information concerning appropriate personal protective equipment.

Should respiratory protection be required, the Department will supply a NIOSH approved respirator with proper cartridges. Employees must receive clearance from a physician before a respirator can be worn, and be properly fit tested. Each employee assigned a respirator is responsible for cleaning, disinfecting and maintenance of the equipment. Any defect or broken component shall be reported to supervision, and the respirator placed out of service until repaired, or discarded. Refer to Safety Bulletin on RESPIRATORY PROTECTION.

An adequate supply (minimum 5 gallons) of clean water, soap and paper towels shall be provided on one pavement marking truck in the operation. Water shall be changed frequently. Eye wash kits shall be readily available.

Cleaning Paint Tanks

Wearing of personal protective equipment must be strictly enforced while cleaning paint tanks. Items include rubber gloves, face shield and safety glasses or goggles. If entry into the tank is required for cleaning, permit-required confined space entry rules shall be followed (refer to Safety Bulletin on PERMIT-REQUIRED CONFINED SPACE ENTRY).

Smoking is prohibited in the immediate area during the operation.

GUIDERAIL WORK

Employees working with guiderail will receive training in proper repair and maintenance operations. Each guiderail crew supervisor shall have a copy of, and be familiar with, Department Guiderail Standard Manuals.

Personal Protective Equipment

Department-approved High Visibility Apparel & Hard Hat

Leather Gloves

Eye, Face, and Hearing Protection

Respiratory Protection - appropriate for cutting galvanized steel

Cutting Glasses or Green Face Shield

Welding Gloves and Leathers

Toe Protection

Department Work Clothing Guidelines must be adhered to by all employees engaged in guiderail repair. Refer to Safety Bulletin on WORK CLOTHING GUIDELINES.

Lifting is a significant part of guiderail work. Refer to manual section on PROPER LIFTING TECHNIQUES. Use mechanical lifting methods when possible.

Danger - Guiderail may have stored energy which when released improperly may cause serious injury. Lock Out/ Tag Out procedures may be required. Use proper energy control methods and tools.

Work Zone Protection & Traffic Control

When working on multi-lane, one-way highways, both shoulder and median work locations must be considered. While repairing guiderail on the shoulder, all appropriate work zone traffic control measures and devices, in accordance with the National Manual of Uniform Traffic Control Devices (MUTCD) and the NYS Work Zone Traffic Control Manual (WZTCM) shall be used. Refer to WZTCM manual section on SHOULDER WORK.

While repairing guiderail in the median, it may be necessary to close both lanes immediately adjacent to the guiderail. If the median on the opposite traffic side is wide enough to allow sufficient separation between the work site and traffic, the opposing lane will not be closed. However, unless there is a physical barrier between traffic and the work site, the area will be signed for shoulder work.

On two-lane, two-way roads where the shoulder is less than 8' wide, the lane adjacent to the work site shall be closed in accordance with procedures outlined in the MUTCD and WZTCM.

When working on bridges over roads, railroads or pedestrian walkways, protection must be established to ensure nothing drops onto the travel-way below.

SEALING CRACKS & JOINTS

Personal Protective Equipment and Work Clothing

Employees exposed to caustic, toxic, or hot splashing or flying materials will not wear short sleeve shirts, short pants, or other apparel which leaves their arms, torso, and legs exposed. Shirt sleeves must be rolled down and pants worn outside boots. Contact lenses with appropriate eye protection (refer to manual section on EYE PROTECTION). Employees working where the potential exists for foot and toe injury due to burns shall wear appropriate safety footwear.

Face shields or goggles and heat resistant gloves must be worn anytime when working near or with equipment when surfaces are hot and a burn hazard exists.

Safety Items Needed on the Job Site

A dry chemical fire extinguisher (20 lb ABC or BC minimum)
Five gallons of fresh clean water in a clean container in case of burns
Eye wash kit
First aid kit
Clean clothes
Emergency phone numbers

First Aid

If hot asphalt or tar contacts the skin, a clean cloth or towel, wrung out in cold water, should be placed over the affected area, or the flesh burn soaked in cold water if more severe. If the burn is severe, only cold water applications should be made and medical treatment immediately secured. Except for minor burns, do not attempt to remove asphalt/tar from skin, obtain medical treatment.

Liquid Propane Burners with Automatic Control:

Lighting Procedure:

- Connect liquid propane hose to liquid propane cylinder.
- Be certain that all needle valves are closed.
- Open propane cylinder valve slowly.
- Regulator pressure has been pre-set and need not be adjusted (Pressure should not exceed 22# psi.)
- Set temperature control to 350°.
- Open weather cap on smoke stack.
- Slowly open needle valve on the burner approximately one turn.

- Depress red button on safety valve and light burner with a striker. Hold red button down for approximately 30 seconds or until burner remains lighted when red button is released.
- Repeat above steps to light second burner.
- Proper hand, eye, and face protection should be used when lighting burner.

To shut off burners:

- Close cylinder valve at propane cylinder and allow gas to burn out of line.
- Shut off burner needle valve.
- Set temperature control back to low side of temperature scale.
- Close weather cap on smoke stack.

Power Spray Operating Instructions

Starting Instructions:

- Check engine for oil and gasoline.
- Turn the hand spray valve at the pump to the "OFF" position.
- Turn valve on the suction side of the pump to the "ON" position.
- Disengage motor.
- Start engine.

When sufficient material has been melted, engage clutch (only with engine running) and allow material to circulate back into the kettle.

Hand Spray Attachment

- Be sure that hand spray bar valve on the spray bar is closed.
- Turn valve on suction pump to the "ON" position.
- Turn hand spray valve at pump to the "ON" position.
- Open valve on hand spray bar and apply material.

DEPARTMENT/CONTRACTOR COMBINED OPERATIONS

The Department must occasionally rent privately owned equipment, and contract for operator services to run such equipment. When such equipment and/or services are used in conjunction with Department personnel, safety will be a primary consideration.

Rented/leased equipment must meet all safety standards established by the New York State Vehicle and Traffic Law, OSHA, and Department policy (refer to manual section on RENTAL/LEASED & SURPLUS EQUIPMENT). Contractor equipment shall be operated in a safe manner, in accordance with Department policy. Contractors' operators will meet the same standards established for Department employees.

Prior to the start of an operation involving a private contractor or supplier, Department managers and supervisors shall conduct a pre-project planning meeting with the contractor or supplier to review appropriate job safety requirements and procedures. Necessary adjustments or repairs shall be made to the contractor's equipment to comply with appropriate vehicle and equipment safety standards. If any of these safety procedures cannot be met, such equipment shall not be used. This policy shall be included in contract specifications when equipment is rented and operators and/or materials are furnished.

Upon approval of the contract, an on-site, pre-work safety meeting shall be held between Department and contractor representatives to review special safety considerations associated with such combined operations. The Department project supervisor shall review appropriate Department safety procedures and safety manual section with Department and contractor employees at the job-site. If additional Department and/or contractor employees are subsequently assigned to the project, they shall also be advised of safety procedures that pertain to the specific project before beginning work.

The work zone traffic control plan and traffic control devices, which comply with the National Manual on Uniform Traffic Control Devices and DOT Work Zone Traffic Control Manual, shall be reviewed by all workers to ensure an understanding of their roles and responsibilities for a safe work zone for themselves and the traveling public. Contractors' personnel shall use the same safety equipment and personal protective equipment required of Department employees.

Particular attention shall be given to aspects of the job which require ongoing direct coordination between Department and contractor employees. It is critical that such activities be carried out in a safe manner. This is especially important when Department workers provide traffic control for the contractor's equipment, particularly when backing up.

Whenever new workers come to the job-site, the Department supervisor shall review with them the elements of this procedure before they begin work. This applies to Department and contractor employees. New equipment brought to the job shall be thoroughly inspected by the Department's supervisor before being used.

COMBINED OPERATIONS WITH OTHER HIGHWAY AGENCIES

Whenever Department forces engage in cooperative work activities to assist a municipality or other highway jurisdiction, or other State agency, the same high level of Department safety standards must be applied to the operation. This pertains to work zone set up, work zone traffic control, high-visibility apparel and hard hats, personal protective equipment, and all other aspects of providing a safe work environment. Standards found in this safety manual will be the test of this policy.

If this guideline is not followed by the other jurisdiction, Department employees will not engage in the cooperative or supportive project. Department employees will not be subjected to risks created by others in control of an operation who do not maintain, at a minimum, Department safety standards.

REGIONAL SAFETY OFFICE INFORMATION

MO - ALBANY

50 Wolf Road
1st Floor
Albany, NY 12232
(518) 457-2420 (Office)

1 - ALBANY

50 Wolf Road
1st Floor
Albany, NY 12232
(518) 485-5812 (Office)

2 - UTICA

207 Genesee Street
Utica, NY 13501
(315)-793-2392

3 - SYRACUSE

333 E. Washington St
Syracuse, NY 13202
(315) 428-4340

4 - ROCHESTER

1530 Jefferson Road
Rochester, NY 14623
(585) 272-3338

5 - BUFFALO

100 Seneca Street
Buffalo, NY 14203
(716) 847-3236

6 - HORNELL

107 Broadway
Hornell, NY 14843
(607) 324-8588

7 - WATERTOWN

317 Washington St.
Watertown, NY 13601
(315) 785-2509

8-POUGHKEEPSIE

4 Burnett Blvd.
Poughkeepsie, NY 12603
(845) 431-5721

9 - BINGHAMTON

44 Hawley Street
Binghamton, NY 13901
(607) 721-8046

10- HAUPPAUGE

250 Veterans Memorial
Hwy
Hauppauge, NY 11788
(631) 952-6640

11 - NYC

47-40 21st St.Rm.840
Long Island City, NY 11101
(718) 482-4586

NYSDOT DESIGN STANDARDS

