

Manual for Employee Safety & Health

An Accident and Illness Prevention Program

A publication of the Employee Safety and Training Division

The Manual for Employee Safety and Health (MESH) is a publication of the Pennsylvania Department of Transportation, compiled and maintained by the Employee Safety and Training Division. If there are any programs, policies and protocols described in this publication that are not the direct responsibility of the Employee Safety and Training Division, the responsible party is identified in the affected chapter or section.

This publication is for internal use only. A new edition of the MESH will be published annually. Actual review and revision dates for each chapter will be documented in each chapter and protocol, along with a summary of any changes and updates that were made to the content of the chapter from the previous edition.

Upon issuance of Publication 445M (12-17), Publication 445 (10-13), entitled Safety Policy Manual, was replaced with Publication 445 (12-17), entitled Safety Policy Handbook. Publication 445M serves as the comprehensive manual containing all elements and protocols for PennDOT's AIPP for management and District Safety Coordinators. Less comprehensive handbooks, like Publication 445 (2-20), contain the information from the 445M that employees and first level supervisors need to know and have readily accessible.

Authority:

"A self-insured employer shall maintain an Accident and Illness Prevention Program as a prerequisite for retention of its self-insured status. "Pennsylvania Workers' Compensation Act, Article X, Health and Safety, Sec 1001 (a) and (b). "Pennsylvania Statutes Title 77 P.S. Workers' Compensation, § 1038.1.1 (a) and (b)."

History:

The original version of Publication 445M was issued in September 2017. Pub 445M resulted from an initiative to consolidate multiple PennDOT Personnel Informational Memorandums (PPIM) containing policies and protocols pertaining to Employee Safety and Health; to document and incorporate many established communications and practices; and to facilitate compliance with Accident and Illness Prevention Program (AIPP) requirements as a self-insured employer in the commonwealth of Pennsylvania.

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Introduction

The Pennsylvania Department of Transportation (PennDOT) is committed to protecting the safety and health of our employees, and improving productivity through accident and injury prevention and a healthier workforce. PennDOT will strive to provide our employees with the safest possible work environment and the knowledge necessary to safely carry out their job duties. PennDOT's safety efforts shall be ongoing and focus on continuous improvement.

The purpose of the Manual for Employee Safety and Health (MESH) is to establish statewide safety guidelines which are to be followed by all employees. Any changes to the MESH must be made by the Employee Safety and Training Division.

Safety must be incorporated into all work operations from planning to completion. PennDOT is responsible for creating a safe work environment. A safe environment exists when employees are involved in decisions affecting workplace safety. Active safety committees supported by management are the key to a successful safety program.

Working safely is a responsibility shared by all employees. Managers and supervisors are to maintain the safest possible working conditions by encouraging safe work practices and enforcing safety policies and procedures. All necessary and available agency resources shall be utilized to accomplish this important endeavor. Employees are to perform their duties in the safest manner possible and adhere to all established safety rules, procedures, and work practices.

Employees are encouraged to actively participate in PennDOT's safety efforts. Involvement by all levels of the organization must contribute to an effective safety and health program for the benefit of all employees, their families, and the public.

Influence, control, and responsibility are the key ingredients to an effective safety program. If one of the items is missing or lacking, the program will fail.

First level supervisors have the most influence on safety. They work directly with the employees constantly observing safety behavior. First level supervisors provide positive or negative influence. Positive influence will motivate employees to be aware of safety and work within a safe environment while negative influence will have a detrimental effect. First level supervisors must take an active role in promoting safety to ensure a successful outcome.

Management has the most control of safety. Management's duty is to enforce safety policies, change procedures, or redirect resources.

Safety is everyone's responsibility. The importance of safety must be communicated to all levels on an ongoing basis. Safety programs must be established and supported (resources and personnel) to achieve a safe working environment.

Unsafe acts and unsafe conditions must be prevented. When an accident occurs, we must learn from it. The focus of the investigation must be fact finding, not fault finding, to accurately identify causes and determine appropriate corrective actions.

Working safely is a condition of employment. Disregarding safety rules will not be tolerated.

Education and training are essential in developing and maintaining a safe work environment.

Chapter A – Safety Policy Memorandum

A safety policy memorandum is signed by the Secretary of the Pennsylvania Department of Transportation (PennDOT) and issued to all PennDOT employees at the beginning of each fiscal year, no later than September 1. This memorandum serves as the foundation for all Accident and Illness Prevention Program (AIPP) activities.

1. Content

- A. The proactive philosophy regarding accident and illness prevention.
- B. Statements including action words and consistent with PennDOT's mission.
- C. The commitment to employee safety and health, and focus on continuous improvement.
- D. Contact information for the Employee Safety and Training Division.

2. Communications

- A. This memorandum is distributed to all current employees via email and to all new employees during orientation.
- B. This memorandum is a mandatory posting on employee bulletin boards at all PennDOT facilities, and it is listed among other required safety postings on the safety inspection checklists for garages and stockpiles.

3. Program Review

- A. A new edition of the memorandum will be issued no later than September 1 of each year.
- B. Documentation of the annual review of this chapter, including changes and updates, will be documented under Recordkeeping.

4. Recordkeeping

- A. A copy of this memorandum and the email regarding its issuance is maintained as evidence of its distribution for the current and previous two years.
- B. This memorandum is maintained among the mandatory handouts in the New Employee Orientation Program (NEOP) curriculum.
- C. This chapter contains all new information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

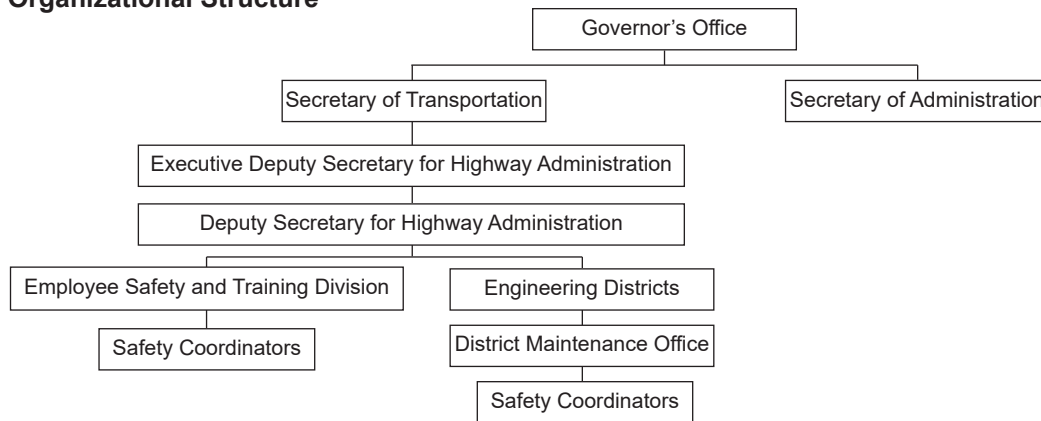
Section	Content
Intro-4	Original, based on current practices, organization charts, and AIPP requirements for Element B.

Chapter B – Accident and Illness Prevention Service Providers

PennDOT employs qualified accident and illness prevention personnel that possess, or obtain within two years of hire, at least one of the following qualifications and two years of acceptable safety experience:

- An Advanced Safety Certificate earned from the National Safety Council's Safety Training Institute.
- A Bachelor's Degree, Master's Degree or Doctoral Degree in safety earned from an accredited program from an accredited college or university.

1. Organizational Structure



2. The Department of Transportation's Highway Administration Employee Safety and Training Division

The Employee Safety and Training Division is the author and owner of this publication and has been appointed to coordinate the provision of the AIPP for PennDOT.

A. Authority and Credentials

- (1) The Employee Safety and Training Division is under the authority of the Deputy Secretary for Highway Administration, Executive Deputy Secretary for Highway Administration, the Secretary of the Department of Transportation, and ultimately the Governor.
- (2) The Employee Safety and Training Division is designated and empowered to coordinate employee safety and health programs and services for PennDOT in accordance with state and federal laws, regulations, and standards; published directives; collective bargaining agreements; the Accident and Illness Prevention Program (AIPP) requirements; the Personnel Rules; and past practices. This division maintains the documentation, files the reports, and completes the forms that are necessary to comply with the AIPP requirements of the Bureau of Workers' Compensation and the Governor's Office of Administration.
- (3) The Safety Manager and staff of the Employee Safety and Training Division must achieve credentialed status as a certified Accident and Illness Prevention Service Provider two years from the date of their appointment to this position.

B. Division Chief/Safety Manager

- (1) Serves as the agency Safety Coordinator for PennDOT.
- (2) Maintains PennDOT's Accident and Illness Prevention Program (AIPP). This includes all elements and protocols in addition to additional protocols not specifically listed in the AIPP guidance.

- (3) Evaluates and reviews the program annually to identify opportunities and areas in need of improvement.
- (4) Serves as the point of contact for all safety matters, and administers the safety program for the agencies to ensure a safe workplace for all employees.
- (5) Manages and directs the activities of professional employees engaged in a full range of safety-related activities.

C. Orientation

All Employee Safety and Training Division staff must satisfactorily complete the mandatory safety coordinator orientation training provided by the Governor's Office of Administration and/or the commonwealth safety consultant, which is presently Compliance Management International (CMI).

D. Contact Information

- (1) Employee Safety and Training Division staff contact information is distributed annually to all employees as an attachment to the Safety Policy Memorandum.
- (2) More generic contact information for the Employee Safety and Training Division is also included in each edition of the Safety Policy Handbook (Pub 445).

Name	Working Title	Office	Email
Currently Vacant	Safety Specialist Manager		
Rich Falvo	Safety Specialist Supervisor	(724) 355-4634	rfalvo@pa.gov
Larry Kershishnik	Safety Specialist 2	(717) 787-6329	lkershishn@pa.gov
Lisa Stamm	Safety Specialist 2	(717) 787-2648	lstamm@pa.gov
Brian Pollick	Safety Specialist 2	(814) 355-4731	bripollick@pa.gov

3. Central Office/District Safety Coordinators (DSC)

- A. PennDOT's DSCs support and promote the successful implementation of the programs, policies, and protocols in this publication. The DSCs are located in the Harrisburg Central Office and throughout the 11 engineering districts. The Deputy Secretary for Highway Administration and the engineering districts may consider appointing up to two DSCs within the districts. Exceptions may be directed in writing to the Executive Deputy Secretary.
- B. Authority and Credentials
 - (1) The Secretary of PennDOT, Executive Deputy Secretary, Deputy Secretary for Highway Administration and the District Executives have the oversight and authority to enforce the safety protocols found within this publication through the safety management staff and DSCs.
 - (2) DSCs must achieve credentialed status as a certified Accident and Illness Prevention Service Provider two years from the date of their appointment to this position.
- C. Contact Information
 - (1) Safety Coordinator contact information is distributed annually to all employees as an attachment to the Safety Policy Memorandum.
 - (2) More generic contact information for the DSCs is also included in each edition of the Safety Policy Handbook (Pub 445).

District	Name	Office	Email	Location
District 1-0	Jake Beach	(814) 678-7061	jacbeach@pa.gov	Oil City
District 2-0	Terry Moore - Acting	(814) 765-0845	temoore@pa.gov	Clearfield
District 3-0	Thomas Walker	(570) 368-4363	thomwalker@pa.gov	Montoursville
	Vacant			
District 4-0	Wayne Wolfe	(570) 335-9247	wawolfe@pa.gov	Dunmore
	Jacob Hoinowski	(570) 561-4129	jhoinowski@pa.gov	
District 5-0	Dennis McArdle	(610) 871-4404	dmcardle@pa.gov	Allentown
	Nicolas Safin	(484) 225-2671	nsafin@pa.gov	
	Shared Email	PD, District 5-0 Safety Coordinator		
District 6-0	Vacant			King of Prussia
	Joseph Mullan	(610) 587-7825	jomullan@pa.gov	
District 8-0	Ron Wylie	(717) 775-8166	rwylie@pa.gov	Harrisburg
District 9-0	Pam Kane	(814) 696-7170	pamkane@pa.gov	Hollidaysburg
	Lawrence (Jake) Hann	(814) 696-7246	lhann@pa.gov	
District 10-0	Keith Rummell	(724) 422-1102	kerummel@pa.gov	Indiana
District 11-0	Mark Baldigowski	(412) 742-7873	mbaldigows@pa.gov	Bridgeville
District 12-0	Vacant			Uniontown

4. Program Review

- A. This chapter will be reviewed annually to ensure that all information is current.
- B. Details of the annual review will be documented under Recordkeeping.
- C. Position descriptions for the Accident and Illness Prevention Service Providers will be reviewed annually to ensure that all information is current.

5. Recordkeeping

- A. The Annual Report of AIPP Status by Individual Self-Insured Employers (LIBC-220E) for PennDOT is updated and submitted to the Governor's Office of Administration during the month of June, which includes the verification of its Accident and Illness Prevention Service Providers. The email submission with the attached LIBC-220E is maintained on file.
- B. The Employee Safety and Training Division will maintain a copy of the position descriptions for our Accident and Illness Prevention Service Providers.
- C. Annual records for the Safety Policy Handbook Training will be maintained on file by the Employee Safety and Training Division, as evidence that employees have access to the contact information for our Accident and Illness Prevention Service Providers.

- D. This chapter contains all new information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Content
Intro	Original, based on current practices
1	Original, based on current organization charts
2, 3	Original, based on current practices and AIPP requirements for Element B
4, 5	Original, based on AIPP requirements for Element B

Chapter C – Responsibilities

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Every employee has some responsibility for workplace safety and health at PennDOT. This chapter identifies general safety and health responsibilities by organization or position, describes specific language that must be included in every employee's position description, and explains how safety is incorporated in the employee performance review process. Program specific responsibilities are identified in the ensuing chapters and protocols.

REMEMBER: SAFETY BEGINS WITH YOU!

1. Employee Safety and Training Division

The Employee Safety and Training Division is the primary point of contact for all safety and health related issues involving employees in the bureaus (organization codes 2000 and above). Program specific responsibilities are identified in the ensuing chapters and protocols.

A. Safety Manager

- (1) Maintains the agencies' safety programs to ensure compliance with state and federal laws, regulations, and standards; published directives; collective bargaining agreements; the Accident and Illness Prevention Program (AIPP); the Personnel Rules; and past practices.
- (2) Evaluates and reviews the program annually to identify opportunities and areas in need of improvement.
- (3) Develops recommendations and position papers that will address program needs and provide for continuous improvement.
- (4) Maintains PennDOT's Accident and Illness Prevention Program (AIPP). This includes all elements and protocols in addition to additional protocols not specifically listed in the AIPP guidance.
- (5) Manages and directs the activities of five professional employees engaged in a full range of safety related activities. Some of the incumbent's responsibilities are managed through subordinate staff. Responsible for evaluating performance, approving and disapproving leave, providing training and development, establishing priorities and controls, disciplining when necessary, and directing or instructing subordinates in job methods and techniques.
- (6) Establishes and monitors safety program goals and objectives. Communicates measurement rates and goals to all employees and makes recommendations for improvements when necessary.
- (7) Based on an understanding of the laws, directives, and other commonwealth and agency safety policies and procedures in place, provides guidance and recommendations to all levels of management in the formulation of policy and promotion of sound safety practices.

- (8) Analyzes loss data and prepares reports to determine effectiveness and identify injury trends.
- (9) Works with PennDOT's safety committees to develop and maintain an effective safety recognition program which recognizes individual and group safety milestones and extraordinary acts of safety or contributions to the safety of others.
- (10) Provides safety-related communications/education to employees about the agency's safety policies, procedures, and/or contact information.
- (11) Publishes the safety newsletter and contributes articles for other newsletters upon request.
- (12) Maintains and regularly updates PennDOT's Manual for Employee Safety and Health (Pub 445M).
- (13) Ensures all employees receive safety orientation training. Also ensures that employees who have specific safety responsibilities, such as fire safety team members, safety committee members, first responders, those conducting investigations or hazard assessments, and those who have jobs where they are exposed to specific hazards, receive appropriate initial and refresher training.
- (14) Serves as Continuity of Operations Program (COOP) manager responsible for plan development, testing, and implementation. Ensures emergency action plans are up-to-date for all occupied work locations and ensures emergency evacuation drills are conducted every six months and evaluated for effectiveness.
- (15) Ensures worksites are inspected on a regular basis to identify hazards and that identified hazards are addressed or are eliminated.
- (16) Ensures all workplace accidents/incidents are investigated.
- (17) Ensures that safety committees comprised of members from the various organizations and/or work locations meet on a regular basis. Ensures all safety committee members have received necessary training, and periodically reviews meeting minutes to assure effectiveness of the committees.
- (18) Ensures that ideas and suggestions submitted regarding safety are addressed/responded to in a timely manner.
- (19) Ensures that prompt access to first aid, CPR, and/or automatic external defibrillators (AED) is available either through a local emergency service or by having trained first responders available throughout the agency.
- (20) Administers the PA Worker and Community Right to Know Act including ensuring annual inventory of hazardous substances and preparing the annual Right to Know Checklist report and Hazard Substance Survey Form. Coordinates training with the agency's Right to Know designees.
- (21) Manages PennDOT's driver license record check process to ensure employees who operate PennDOT vehicles and equipment have and maintain a valid driver's license of the appropriate class for the vehicle being operated.
- (22) Maintains a general understanding of the policies, procedures, and practices regarding Workers' Compensation, drug and alcohol testing for CDL operators, the State Employee Assistance Program, workplace violence, the ADA, and security.
- (23) Maintains a relationship with other commonwealth agencies that can provide safetyrelated assistance and guidance as necessary, such as the Department of Labor and Industry, Department of Health, Department of Environmental Protection, Department of General Services, and the Pennsylvania Emergency Management Agency.
- (24) Maintains a relationship with professional organizations and other states' departments of transportation that can provide safetyrelated assistance and guidance as necessary. Maintains a working relationship with the professional safety consultants who assist the incumbent on technical or unusual safety issues and timeconsuming activities.

- (25) Performs special projects and other duties as required or assigned.
- (26) Works with appropriate budget/fiscal staff to ensure necessary funds are available for training, equipment, and the correction of unsafe or unhealthy working conditions.
- (27) Takes an active role in succession planning through use of Career Development Plans in collaboration with employees/supervisor. In conjunction with the supervisor, participates in knowledge management/transfer by identifying key aspects of the job and sharing explicit and tacit program/technical knowledge with other employees.

B. Supervisor, Program Management and Development

- (1) Supervises a professional staff in the management, development, and quality assurance review of the Accident Illness and Prevention Program (AIPP) for PennDOT.
- (2) Responds to suggestions submitted via IdeaLink that pertain specifically to employee safety. Administers the Safety Portal, Safety Talks, and Pre-Operational Processes.
- (3) Conducts research to support updates to current policies and procedures, and content for new policies and procedures.
- (4) Develops, implements, and provides advice/guidance on all elements and protocols of the AIPP in a manner that is consistent with legal requirements, policies, and procedural requirements.
- (5) Leads staff in research to support and update current policies and procedures, to draft new policies and procedures, and/or to make recommendations for the development of new, and the revision of existing, programs and policies.
- (6) Develops and leads staff in the development of training materials, conducts training in a variety of settings and to employees at all levels within the organization, typically at or above the first supervisory level. Provides on-the-job training and support to District Safety Coordinators.
- (7) Performs special projects and other duties specifically pertaining to the AIPP as required or assigned.
- (8) Conducts site visits in support of the Employee Safety and Training Division.
- (9) Acquires and maintains a certification recognized by the Bureau of Workers' Compensation as a qualified provider of accident and illness prevention services.
- (10) Takes an active role in succession planning by completing a Career Development Plan in collaboration with the supervisor. In conjunction with the supervisor, participates in knowledge management/transfer by identifying key aspects of the job and sharing explicit and tacit program/technical knowledge with other employees.
- (11) Actively engages in succession planning by assessing potential vacancies; identifying current and future critical needs and competencies; and assessing the interest, availability, and readiness of current staff and candidate pools. Works with employees to complete and maintain a Career Development Plan. Engages employees and recognizes employees and their accomplishments. Establishes mechanisms to identify, capture, and share explicit and tacit program/technical knowledge among staff.

C. Safety Specialists/District Safety Coordinators (District/Central Office)

- (1) Conduct comprehensive safety reviews in PennDOT facilities and at field operation sites to ensure compliance with established safety standards, regulations, commonwealth and PennDOT policies and promote employee health and safety.
- (2) Assist organizations with hazard identification and controls. Participate in the development of Job Safety Analysis (JSA).
- (3) Coordinate comprehensive safety review program. This consists of maintaining an electronic file on safety review reports conducted by Safety Division and field personnel. Review and analyze reports and prepare a written course of action to include follow-up reviews when necessary shall be done on a quarterly basis.

- (4) Coordinate Driver Record Check reviews and analysis of adverse actions. This consists of running two reports from the Driver Licensing system and conducting monthly reviews of Central Office employees. Assist Field Operations HR Staff with execution, review and interpretation of reports to identify adverse actions. Also execute and interpret district reports for districts upon the request of the Field HR Business Partner.
- (5) Coordinate PennDOT's Community and Employee Right-to-Know program. This consists of maintaining a current list of county Right-to-Know coordinators to be reviewed and updated at least quarterly, provide training to District Safety Coordinators on SDS Pro database and county Right-to-Know coordinators as needed.
- (6) Ensure organizations have established functional emergency response plans for all facilities.
 - a. Conduct Fire Safety Inspections of PennDOT's facilities, design and conduct fire safety training programs, schedule and critique emergency evacuation drills in PennDOT facilities, and ensure all PennDOT facilities are in compliance with National Consensus Standards.
- (7) Responsible for coordinating PennDOT's Back Injury Prevention Program, Medical Surveillance Program, Safe/Defensive Driving, monitoring District and County Safety Committees.
 - a. Ensure medical supplies and services are available as required.
 - b. Coordinate or assist in the coordination of industrial health events.
- (8) Conduct the safety related portion of NEOP training.
- (9) Review Safety Contracts related to the purchase of safety equipment and provide recommendations to the Bureau of Office Services.
- (10) Provide general safety program services to organizations to include: review and/or participate in the accident, injury, and near miss reporting investigation and review process. As well as, providing prevention recommendations, interpreting policy directives and safety standards, and responding to employee complaints.
- (11) Participate in the reporting, investigation, assessment, and response to industrial hygiene concerns.
- (12) Review, evaluate and perform qualitative, quantitative and compliance analysis as well as a quality assurance review on Employee Safety programs and initiatives. Author reports and presentations of findings, and make recommendations for changes, training, and additional research on those findings. This function is performed in coordination with various stakeholders throughout the agencies (County Managers, Field HR Business Partners, District Executives, Bureau of Maintenance, Bureau of Operations, etc.). These areas include (but are not limited to):
 - a. Safety Corrective Action Plans
 - b. Accident Tracking System (ATS)
 - c. Safety Committees
 - d. Safety Inspections
 - e. Fleet and Injury Accidents
- (13) Develop annual agency safety goals, track progress, and analyze data to determine trends, to measure progress toward established goals, and to develop reports based on aforementioned analyses.
- (14) Develop and manage data record productions, including extracting data and presenting it in Excel format (including data summaries, charts, graphs, etc.) relating to safety program results and progress towards goals and objectives.

- (15) Analyze loss data and prepare reports to determine effectiveness and identify accident trends.
- (16) Develop and manage the Personal Protective Equipment (PPE) program. Research proposed PPE pilots, develop criteria for PPE pilot evaluation, and determine overall success of each PPE pilot.
- (17) Author articles for the quarterly Safety Newsletter and Safety Talks as assigned.
- (18) Administer the CDL Driver Record and Medical Certification reviews and analysis of adverse actions.
- (19) Perform special projects and other duties as required or assigned.
- (20) Develop and implement employee safety programs and provide advice and guidance for employee safety programs in a manner consistent with legal requirements, policies, and procedural requirements.
- (21) Conduct research to support and update current policies and procedures, to draft new policies and procedures, and to make recommendations for the development of new and the revision of existing programs and policies.
- (22) Ensure safety policies are communicated to employees within their organizations and assist with the enforcement of those policies.
 - a. Coordinate/assist with the implementation and monitoring effectiveness of all AIPP protocols in their organizations.
- (23) Develop training materials and conduct training pertaining to the AIPP in a variety of settings and to a range of employees at various levels within the organization. Provide on-the-job training and support for DSCs.
- (24) Conduct site visits in support of the Employee Safety and Training Division.
- (25) Participate and coordinate employee participation in safety initiatives.
- (26) Ensure lines of communication are established for employee to submit safety concerns/suggestions.

D. Contracted Safety Consultants

The Governor's Office of Administration has a contract for AIPP support for the commonwealth: Compliance Management International (CMI), Betsy Lovensheimer, at 1.800.701.9369 ext. 110 or ra-oasafety@pa.gov.

All services rendered by this contractor to PennDOT must be coordinated by the Employee Safety and Training Division. Assist the Employee Safety and Training Division as necessary with the development of agency safety policies and work procedures.

- (1) Develop and/or provide safety and health training as necessary.
- (2) Perform hazard assessments and conduct safety inspections as needed.
- (3) Review the AIPP as necessary to assess compliance and identify areas needing improvement.
- (4) Perform data analysis to identify injury trends and opportunities for improvement.
- (5) Serve as a consultant in areas of industrial hygiene, ergonomics, and occupational health.
- (6) Obtain other consultants who can identify suspected exposures in the workplace.

2. District Executives and Bureau Directors

Provide leadership in support of the AIPP initiatives and requirements. Ensure that Human Resource Field Operations Division staff, managers, supervisors, employees, safety committees, accident review panels, and building evacuation teams are fulfilling their responsibilities as described in this manual. Program specific responsibilities are identified in the ensuing chapters and protocols.

3. Managers

General responsibilities are listed below. Program specific responsibilities are identified in the ensuing chapters and protocols.

- A. Establish, maintain, and enforce safe work conditions and environments by providing proper tools, equipment, training, education, and personal protective equipment (PPE).
- B. Establish and maintain effective lines of communication regarding safety.
- C. Actively engage in hazard identification during job planning and preparation. Ensure that hazards are eliminated or controlled to reduce exposures and risk as much as operationally feasible. Ensure the provision of adequate personal protective equipment if there will still be exposure to hazards and risk of injury after all controls are in place.
- D. Address hazards and implement controls to minimize risk of injury as soon as it is observed or reported, even if the affected employees are not in their chain of command.
- E. Ensure that all safety and health policies and rules have been effectively communicated, and that employees demonstrate understanding and adhere to these in the work environment.
- F. Ensure that standard operating procedures are established for each operation, either in writing or through common understanding among all employees, that address all anticipated hazards.
- G. Provide and/or coordinate all required safety and health training for all employees.
- H. Provide and/or coordinate operational training to employees to equip them to perform all assigned tasks in a safe and competent manner.
- I. Provide or disseminate safety information to supervisors and/or employees as appropriate, or as directed.
- J. Oversee and complete the documentation of all investigations of fleet accidents, work related injuries/illnesses, and near misses in accordance with the requirements in Chapter M.
- K. Arrange for the availability and training on the proper use of all appropriate personal protective equipment.
- L. Provide or coordinate the provision of job specific safety orientation and/or training to all new employees, and all employees upon assignment of a new task or operation that has exposures to hazards.

4. Supervisors

General responsibilities are listed below. Program specific responsibilities are identified in the ensuing chapters and protocols.

- A. Ensure that all employees have the proper skills, knowledge and training to perform all tasks assigned to them in a safe and competent manner.
- B. See to it that all employees have, use, and are trained on proper PPE.
- C. Act safely and direct safe operations by following all safety practices identified in manufacturer publications and our policies, manuals, procedures, work rules, and Job Safety Analysis.
- D. Respond to, investigate and document all fleet accidents, work related injuries/illnesses, and near misses in accordance with Chapter M and take corrective action to minimize the risk of reoccurrence.
- E. Implement Injury Management Procedures for all injury accidents.
- F. Ensure that all safety and health policies and rules have been effectively communicated, and that employees demonstrate understanding and adhere to these in the work environment.
- G. Verify that standard operating procedures are understood by your employees prior to the start of new operation.
- H. Ensure that your employees receive all necessary safety and health training.
- I. Disseminate safety information to your employees as appropriate, or as directed.
- J. Be continuously aware of safety and health conditions within the work area.
- K. Actively engage in hazard identification and take the lead to ensure that hazards are eliminated or controlled, and/or ensure that employees are adequately protected from hazards.

- L. Take or coordinate prompt corrective actions to address any hazard, such as an unsafe condition and an action that results in unnecessary risk, as soon as it is observed or reported.
- M. Ensure adequate supplies of all appropriate personal protective equipment are available prior to starting work and ensure that employees understand how to use it properly.
- N. Provide job specific safety orientation to all new employees and upon assignment of a new task or operation that has exposure to hazards.
- O. Be aware of building evacuation procedures and ensure individuals are designated to provide needed assistance to disabled personnel during emergency evacuations.
- P. Be aware of emergency phone numbers and certified first aid and CPR volunteers.

5. Employees

General responsibilities are listed below. Program specific responsibilities are identified in the ensuing chapters and protocols.

- A. Ensure the safety and health of yourself and your coworkers by understanding and obeying all safety rules and working in a safe manner at all times.
- B. Ensure that you have, use and are trained to use the proper PPE. If you do not have the proper PPE, it is your responsibility to get it before beginning an operation.
- C. Act safely and assist safe work operations by following all safety practices identified in manufacturer publications and our policies, manuals, procedures, work rules and Job Safety Analysis.
- D. Report all injuries, collisions, near misses, and unsafe conditions/acts to your supervisor immediately and follow the supervisor's instructions. Be familiar with and adhere to established safety procedures, rules, and work practices.
- E. Report all workplace hazards or safety concerns through the safety suggestion process or through the supervisory chain of command.
- F. Participate in all required agency safety training and education efforts.

6. Mandatory Position Description Language

Safety responsibilities must be included in every Position Description (PD) and in Employee Performance Review (EPR) ratings. Every employee must clearly understand their role and responsibilities to ensure their personal safety and the safety of their coworkers, by attending to the safety of their respective work locations. Every employee's PD will include a section entitled "Safety". List the following items 1-4, 1-5, or 1-6, depending on the classification and duties, as outlined in this section. Remove any redundant or inconsistent information from other areas of the employee's PD. The rating guidelines provided in this section need to be distributed to all supervisors and managers for use in the completion of the EPR.

- A. All PennDOT Employees
 - (1) Assess your environment and be responsible for your safety, the safety of coworkers, and the public.
 - (2) Attend required safety training and adhere to the requirements of all safety manuals, policies, and laws.
 - (3) Immediately report to your supervisor any incident, unsafe practice, or near miss.
 - (4) When in an enclosed environment (office buildings, confined spaces, flagger stations, equipment pinch points, etc.), know your evacuation process and escape route, your communication protocols, and appropriately react in the event of an incident.
- B. Add for Construction Field Personnel:
 - (1) Evaluate the contractor's operations:
 - a. Immediately stop any unsafe actions.
 - b. Engage in an ongoing safety dialogue with the contractor's leadership.

- C. Add for Supervisors/Managers (Leadership):
- (1) Promote a CULTURE that emphasizes SAFETY as a core value:
 - a. Immediately stop any unsafe actions.
 - b. Incorporate safety into all discussions, deliberations, and decisions.
 - c. Continuously communicate the safety direction.
 - d. Inspire employees to be a MODEL for safety.
 - e. Encourage and support safety initiatives and programs by participating and involving your staff.
 - f. Recognize safety daily.
 - g. Acknowledge EXTRAORDINARY achievements.
 - h. Learn and improve through After Action Reviews (AARs).
 - i. Enforce accountability.

7. Employee Performance Review (EPR) Rating Guidelines for Safe Work Habits

- A. Safety is one component of the overall Work Habits rating factor. Because of this, some discretion is provided for the rater to consider how the employee's overall Work Habits rating is impacted by their performance relative to safety.
- B. If the employee fails to meet the safety objectives as outlined below, consideration must be given relative to that impact on the overall Work Habits rating factor. Poor performance in safety should lead to an overall Needs Improvement or Unsatisfactory rating for Work Habits. Similarly, if the employee meets or exceeds the safety objectives, the other components of the Work Habits rating factor must be weighed in the consideration of a Satisfactory, Commendable, or Outstanding rating.
- C. It must be noted that excellent overall safety performance cannot override poor performance in the other components of the Work Habits rating factor. Therefore, someone who excels at safety could still receive a rating of Needs Improvement or Unsatisfactory for Work Habits, if warranted by their performance of the other components of this rating factor.
- D. The following considerations are provided to assist in determining the employee's rating under Work Habits; M = Meets the safety objective of the rating (Satisfactory), E = Exceeds the safety objective of the rating.
- E. All PennDOT Employees:
 - (1) Assess your environment and be responsible for your safety, the safety of your coworkers, and the public.

M	No instances of recognized unsafe situations going unaddressed.
E	Mentors others through: Coaching, assisting with training efforts, serving on Safety Committees, etc.

- (2) Attend required safety training and adhere to the requirements of all safety manuals, policies, and laws.

M	No instances of non-compliance.
E	Recommends adjusted or additional language, participates in safety committees, etc., and overall is a model for safety.

- (3) Immediately report to your supervisor any incident, unsafe practice, or near miss.

M	No instances of unreported issues.
E	Recommends process improvements to avoid future instances, mentors other employees, etc.

- (4) When in an enclosed environment (office buildings, confined spaces, flagger stations, equipment pinch points, etc.), know your evacuation process and escape route, your communication protocols, and appropriately react in the event of an incident.

M	Familiar with process and protocols, no instances of inappropriate action.
E	Participates in Evacuation Plan Review, serves a leadership role, recommends improvements to processes, etc.

F. Add for Construction Field Staff:

- (1) Evaluate the contractor's operations:

- a. Immediately stop any unsafe actions.
- b. Engage in an ongoing safety dialogue with the contractor's leadership.

M	No instances of permitting unsafe acts to continue, communicates daily with contractors' leadership regarding safety of workforce and the public.
E	Recommends operational adjustments to improve safety, participates in discussions between PennDOT and the Industry regarding improvements, etc.

G. Add for Supervisors/Managers (Leadership):

- (1) Promote a CULTURE that emphasizes SAFETY as a core value:

- a. Immediately stop any unsafe actions.

M	No instances unaddressed.
E	Uses any situation and information from other known unsafe practices as examples for learning.

- b. Incorporate safety into all discussions, deliberations and decisions.

M	No instances of excluding safety in planning or performance discussions.
E	Recognized as putting safety first in all discussions and decisions.

- c. Continuously communicate the safety direction.

M	No instances of failure to communicate the safety direction of PennDOT.
E	Participates in safety discussions through staff meetings, functional area safety meetings, training sessions, assists in the development of newsletter safety messages, etc.

- d. Inspire employees to be a MODEL for safety.

M	Set the example for your staff and co-workers, recognize staff safety efforts.
E	Encourage mentoring, be open to ideas from staff to improve safety, recommend teams and individuals for recognition, etc.

- e. Encourage and support safety initiatives and programs by participating and involving your staff.

M	Participates on safety committees, regularly inquires of staff their desire to participate.
E	Establish a staff rotation cycle on safety committees, volunteer for task group efforts, recommend individuals for involvement in safety improvement groups, volunteer to instruct safety courses, etc.

- f. Recognize safety daily.

M	Conduct daily safety talks, conduct multiple operational reviews daily, utilize the safety QA checklists as a project setup guide, no failures on QA scores, and commend employees for their safe practices.
E	Recommend subjects for development of daily safety talks, establish staff recognition mechanisms, etc.

- g. Acknowledge EXTRAORDINARY achievements.

M	Provide positive feedback to individuals and groups, communicate instances to your supervisor.
E	Provide information to newsletter editor, communicate exceptional safety efforts to peers, etc.

- h. Learn and improve through After Action Reviews (AARs).

M	Conduct AARs, participate in AARs with your peers, communicate and learn from findings.
E	Involve management and peers in your AARs, involve external partners in AARs, implement improvements as a result of AARs, etc.

- i. Enforce accountability.

M	Be consistent in investigation and administer necessary administrative actions, report all instances appropriately, monitor and correct all unsafe acts immediately.
E	Coach and mentor staff, communicate recognized issues to staff, establish corrective action plans, etc.

8. Training and Communications

Specific staff safety responsibilities are reviewed upon the assignment of duties by the supervisor or human resources office and periodically reinforced through the Safety Policy Handbook (Pub 445), which is distributed with training to new employees during orientation and to all employees upon the issuance of each new edition.

9. Program Review

- A. This chapter will be reviewed annually to ensure that all information is current.
- B. Details of the annual review will be documented under Recordkeeping.

10. Recordkeeping

- A. The details of all revisions made to this chapter during the annual review will be documented in this section.
- B. Annual records for the Safety Policy Handbook Training will be maintained on file by the Employee Safety and Training Division, as evidence that program responsibilities were effectively communicated.
- C. This chapter was revised on September 2022. It contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Content
Intro	Original, based on current practices
1	Position Descriptions for current Employee Safety and Training Division
2	Original, based on AIPP requirements for Element C
3, 4	Original, based on current practices
5, 6, 7	Pub 445 (10-13) and original, based on current practices
8, 9	PPIM 12-149 Position Description Language
10, 11, 12	Original, based on AIPP requirements for Element C

Chapter D – Goals and Objectives

The purpose of this chapter is to establish the methods for developing, communicating, and evaluating safety goals and objectives. Annual goals and objectives provide direction and encourage continuous safety program improvement. PennDOT measures performance against these goals and objectives through the analysis of accident and injury data and trends.

1. Criteria

Goals and objectives are developed and defined in a format that meets the following criteria:

A. Specific:

(1) Injury Rate Goals

- a. The U.S. Bureau of Labor Statistics established a formula to calculate an injury rate representative of the number of employees who are injured out of every 100 employees: $\text{Injury Rate} = (\text{Total Injuries} \times 200,000) / \text{Total Hours Worked}$.
- b. This formula is used to measure work related injuries annually, and those rates are used to establish annual injury reduction goals.
- c. Injury rates only include injuries that meet the criteria in OSHA 1904.7 for recording and reporting occupational injuries and illness.

(2) Fleet Accident Rate Goals

- a. The American National Standard Institute (ANSI) has established a formula to calculate a fleet rate representative of the number of fleet accidents that occurred per million miles traveled: $\text{Fleet Rate} = (\text{Total Fleet Accidents} \times 1,000,000) / \text{Total Miles Driven}$.
- b. This formula is used to measure fleet accidents annually, and those rates are used to establish annual fleet accident reduction goals.

B. Measurable: Rate goals are expressed in a quantitative number.

C. Achievable: Rate goals are based on an organization's actual performance in the recent past, the average of their best three rates of the past five years.

D. Relevant: Rate goals are directly related to the needs of the organization to reduce injuries and fleet accidents, and the costs associated with them.

E. Time-Based: Rate goals are established and performance is measured annually. Systems are in place for local management to be able to monitor their progress throughout the year.

2. Procedures

The Employee Safety and Training Division establishes rate reduction goals for injury and fleet accidents.

- A. Benchmark rates are established at the end of each fiscal year for each organization and all of PennDOT. For example, a benchmark rate might be the average of the three lowest fiscal year end rates within the past five fiscal years.
- B. Reduction goal rates are established for the ensuing fiscal year based on the benchmark rates of each organization overall. For example, the reduction goal rates might represent a 5% reduction of the benchmark rates.
- C. A report is sent out by September of each year, summarizing the performance of each organization overall in the previous fiscal year and explaining the goals for the current fiscal year. This is described in the Communications section of this chapter.

3. Communications

- A. A Department Wide Safety Rates/Goals memorandum is signed by the Secretary and sent to the Executive Committee, Bureau Directors, District Executives, and Assistant District Executives by September of each year. This memo includes a performance report for each organization and overall for the previous fiscal year, and explains the reduction goals for the current fiscal year.
- B. The PennDOT Safety Goals intranet site, soon to be replaced by an application in the PennDOT Integrated Facility (PDIF), makes fleet and injury accident goals and “real time” data (updated weekly) available to all supervisors and managers.
- C. Progress reports are submitted to the Governor’s Office of Administration (OA) upon request, typically in August and February of each year.

4. Program Review

- A. This chapter will be reviewed annually to ensure that all information is current and all procedures are followed.
- B. Details of the annual review will be documented under Recordkeeping.

5. Recordkeeping

- A. The Employee Safety and Training Division will maintain the following records:
 - (1) A copy of the Department Wide Safety Rates/Goals memorandum is maintained on file along with the email that distributed it and the reports that accompanied it.
 - (2) A copy of all mandatory reports submitted to the OA.
- B. This chapter was created on May 1, 2017. It contains new information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Content
1-3	Original, based on current practices
4-6	Original, based on AIPP requirements for Element D

Chapter E – Hazard Identification and Controls

Section	Topic	Page
1	Safety Inspection Process for Engineering Districts	23
2	Office Inspection Process	26
3	Job Safety Analysis	28
4	Program Review	32
5	Recordkeeping	33

This chapter describes the methods of identifying, documenting, and correcting various workplace safety hazards in both field and office settings. Safety inspections of crews, garages, stockpiles, and offices are required, and job safety analyses are documented for field operations.

1. Safety Inspection Process for Engineering Districts

The purpose of this section is to ensure a standardized safety inspection process in support of the commitment to safety and continued compliance with the requirements of the Accident and Illness Prevention Program. Inspection criteria are derived from PennDOT policies, as well as OSHA, NFPA, ANSI and FMC regulations.

A. Every six months, District Safety Coordinators (DSC) must complete a minimum number of safety inspections for crews, garages and yards/stockpiles in each county, as assigned by the Employee Safety and Training Division at the beginning of each fiscal year.

- (1) The required number of crew inspections vary by county, based on a percentage of Highway Foremen assigned to each county.
- (2) A minimum of one crew inspection per year is required for each district office.
- (3) One garage inspection and one yard/stockpile inspection are required per county every six months.
- (4) DSC are encouraged to conduct additional inspections based on incident rates, unsafe conditions, and other statistical data.

B. Safety Inspection Database

A safety inspection database has been developed to facilitate the electronic entry, communication, and tracking of safety inspection data.

- (1) DSC access this database through the intranet to input their inspection reports.
- (2) The database coordinates email communication among Safety Coordinators, Managers and Assistant District Executives regarding safety inspection reports and responses. These emails contain a direct intranet link to the inspection in the database. Recipients must use their CWOPA user name and password to access the database.
- (3) Only authorized users will be able to access the database.
- (4) Reports - The database generates reports for data analysis that may be accessed under the Reports tab.
 - a. The Completed Inspections report provides a listing of inspections completed with finalized scores achieved for crew, garage, and stockpile inspections (there is a tab at the bottom left corner for each). Inspection dates have a hyperlink to the corresponding inspection report. Also at the bottom left are tabs labeled County Average Scores and District Average Scores, which provide average scores for all inspections by county and by district respectively.
 - b. The Inspected Items - Current and Inspected Items - Previous reports provide information by organization code for the current and previous fiscal years

respectively. Tabs at the bottom of the spreadsheet are color coded: purple for crew inspections, blue for garage inspections and green for stockpile inspections. Tab names and contents are as follows:

- I. All Inspected Items
Scores for each inspection for all items and an average score.
 - II. Employee Behavior
Scores for each inspection for items addressing behavior.
 - III. Deficient Items
Indicates with an “x” items that were deficient for each inspection.
 - IV. Comments
Comments and responses as documented on each inspection.
- c. The Quota Report shows the number of inspections required and tracks the number of inspections that have been completed for each district and county for the first half and second half of the current fiscal year.

(5) Users Guides

A Guide for Managers and a Guide for District Safety Coordinators are available with instructions for the most common functions of the database. These are available in the database under the Resources tab and on the P: drive in the following folder:

P:\PENNDOT_SHARED\Highway Administration\Employee Safety Division\SAFETY INSPECTIONS

C. Inspection Checklists and Scoring

- (1) The Employee Safety and Training Division develops and maintains current checklists, which are available electronically under the Resources tab in the Safety Inspection Database or in the following folder: <P:/PennDOT Shared/FORMS PennDOT Authorized>.
 - a. Crew Safety Inspection Checklist (P-6100)
 - b. Garage Safety Inspection Checklist (P-6101)
 - c. Stockpile Safety Inspection Checklist (P-6102)
- (2) To help promote realistic comparisons in the level of safety achieved, all inspected items for crews, garages and yards/stockpiles will be evaluated and appropriately scored. The final score is dependent upon the collective scores of all individual items.
 - a. Almost all inspected items will score a 1, 3, or 5. Items A1 and C1 on the Crew checklist can be awarded a possible score of 0, 1, 2, 3, 4 or 5.
 - b. Items that are fully compliant will score a 5.
 - c. Items that are not fully compliant will be scored based on the level of noncompliance and require a response indicating the corrective action taken to achieve full compliance.
 - d. If an item is not inspected, it will be documented as not inspected, and it will not be included in the calculation of the final score for the inspection.
- (3) Items to be inspected have been assigned to categories A, B, or C to denote their level of importance to safety with appropriate weighting factors.
 - a. Category A and B items are weighted heavier than category C items.
 - b. Category A items are especially critical to employee safety. Any single Category A item scoring below a 3 will result in an automatic unsatisfactory score for the entire inspection.

D. Responsibilities

(1) District Safety Coordinators (DSC)

- a. Inspection checklists must be completed onsite. Documentation must include the number of employees that are not in compliance, their names, and a description of the noncompliance. Any hazard observed that is not found on the inspection checklist shall be documented in the Safety Coordinator comment section for follow up if applicable.
- b. When possible and safe to do so, the DSC should approach any employee that they observe to be noncompliant with an inspection item or in violation of a safety policy to discuss their observations, and to inform the employee that these observations will be documented on the inspection form.
- c. When possible and safe to do so, the DSC should discuss all inspection observations with the supervisor responsible for each area or operation.
- d. The DSC must discuss all inspection observations with the appropriate manager within 24 hours of an inspection.
- e. During all discussions with employees, supervisors, and managers, emphasis must be placed on the accidents and injuries that can be prevented through compliance and safe practices.
- f. Completed safety inspections must be submitted using the database within two business days of the date of inspection. Managers of the organization for which the inspection was conducted will be notified of completed inspections by email.
- g. If a manager has not responded to a safety inspection within thirty days of the date of inspection, the DSC will receive notification by email that no response was submitted. At that point, the DSC will finalize that inspection without a response.
- h. When the DSC receives notification that a manager has responded to an inspection, they must review and finalize the inspection.
- i. Upon finalization, the appropriate Assistant District Executive will receive notification by email of the finalized inspection and should review that finalized inspection. (Only the Employee Safety and Training Division and District Safety Coordinators can edit finalized inspections).
- j. The DSC has administrative control over who can access the safety inspection database for their respective district and associated counties. Personnel selected for this access must be approved by the Employee Safety and Training Division. It is important for all persons who view inspection reports to maintain confidentiality with sensitive inspection details such as failed inspections or the identity of specific employees who were noncompliant.
- k. The DSC is not to alter inspection scores without proper justification from the County Manager and approval from the Employee Safety and Training Division.
- l. The names, email addresses and telephone numbers entered in the "Contacts" section of the database must be accurate for the email function to perform properly. Since the database references email addresses for various managers, it is imperative that the DSC review this contact list at least monthly. Any changes to personnel within the assigned organization who receive, edit, or finalize inspections will necessitate updates to the "Contacts" section.

(2) Managers

- a. Managers are encouraged to obtain and distribute blank copies of all inspection checklists to supervisors and employees to facilitate compliance.
- b. Upon receipt of email notification of a completed safety inspection, the appropriate Manager must review and respond to that inspection within 15 calendar days of the date of inspection. Responses must describe the implementation of corrective actions for noncompliant items in the corresponding response fields. When a response is submitted, the DSC will be notified by email.
 - I. 10 days after the date of inspection, the appropriate Manager(s) will receive a friendly reminder email if a response has not been submitted.
 - II. 20 days after the date of inspection, the appropriate Manager(s) will receive a late notice email if no response has been submitted.
 - III. If no response has been submitted 30 days after the inspection date, the inspection will be finalized with no response.

(3) Assistant District Executive (ADE)

When an inspection has been finalized, the ADE will be notified by email. Upon receipt of email notification, the ADE must review each completed inspection and the responses, and follow up as appropriate.

2. Office Inspection Process

In collaboration with the Employee Safety and Training Division, the Bureau of Office Services (BOS) will be performing inspections of occupied offices and/or buildings to bring PennDOT into compliance with Management Directive 530.31 – Workplace Safety and Health Program. The purpose of this section is to provide guidance on who will be performing the inspections, the frequency of inspections and the reporting/recording procedures.

A. Frequency Requirements

- (1) The semi-annual inspections for each occupied facility are to be completed March 1 - April 30 and September 1 – October 31.

B. Inspection Checklist for Offices (P-34)

This checklist must be used and can be accessed electronically in the following folder:

<P:\penndot shared\FORMS PennDOT Authorized>

- (1) The P-34 identifies the required inspection criteria, which are divided into two sections:
 - a. Safety Related
 - b. Facility Related
- (2) A Yes (compliant) and No (deficient) checkbox is provided for each item.
- (3) The Comments sections are for documenting observations regarding deficient items.
- (4) The Corrective Actions Taken sections are for documenting the resolution of deficiencies.

C. Responsibilities

This table designates the responsible parties for conducting the inspections and correcting facility and safety related deficiencies by location.

Facility Name	Designated Inspector	Responsible for Safety Related Deficiencies	Responsible for Facility Related Deficiencies
District Offices	Facility Administrator	District Safety Coordinator	ADEM*
County Offices/Tunnels			County Manager*
Welcome Centers	Facility Administrator	District Roadside Specialist*	BDL Facilities Manager
Owned DL Centers			
EPTF	Facility Administrator	Employee Safety and Training Division	BOS
WPTF			
Materials Testing Laboratory			
PennDOT Annex			
Server Farm			
Fleet Management Division			
Photogrammetry			
Airport Offices			
Leased DL Centers			
Riverfront Office Center (ROC)			
Keystone Building	Employee Safety and Training Division		BOS

* Responsible persons may vary by district/county, but typically fall under these classifications.

D. Procedures

- (1) The Employee Safety and Training Division must:
 - a. Ensure that all designated inspectors receive initial and periodic refresher training that will address the goals and expectations set forth in this section.
 - b. Ensure compliance by maintaining the electronic files of completed checklists for a minimum of three fiscal years and by auditing the completed checklists periodically.
- (2) Designated Inspectors must:
 - a. Perform the office safety inspection using the P-34.
 - b. Identify facility and safety related deficiencies as indicated on the checklist.
 - c. Include clarifying information for all deficiencies in the comments section of the checklist.
 - d. If there are no deficiencies, file the completed checklists per naming protocol into the assigned electronic folder for each facility.
 - e. If there are deficiencies:
 - I. Send a copy of the completed checklist to party or parties responsible for correcting those deficiencies.
 - II. Ensure that the deficiencies are corrected no later than 15 calendar days following an inspection and that the corrective actions are documented on the checklist.
 - III. Receive the updated checklist and approve the corrective actions.

- IV. File the completed checklists, per the naming protocol, into the designated electronic folder for each facility.
 - f. Ensure that completed checklists are not filed until all deficiencies have been corrected and corrective actions have been documented on the checklist.
- (3) Person(s) responsible for deficiencies must:
- a. Receive the completed checklist with the noted safety related deficiencies from the designated inspector.
 - b. Ensure that all safety related deficiencies are corrected within 15 calendar days of the inspection date and that the corrective actions are documented on the checklist.
 - c. Approve corrective actions taken.
 - d. Submit the updated inspection form to the designated inspector for final approval.
- E. Naming Protocol
- (1) For organizational and auditing purposes, a naming protocol for completed checklists has been developed and must include the following, separated by commas:
 - a. The full name of the facility (do not use organization codes)
 - b. The word Facility or Safety
 - I. Use Facility if no deficiencies were observed or only facility deficiencies were observed and corrected.
 - II. Use Safety if safety deficiencies were observed and corrected
 - c. The date of the inspection as a six digit number (mmddyy)
 - (2) Examples
 - a. District 2-0 Office, Facility, 031711
 - b. Perry County Office, Safety, 092111
 - c. I-70W Welcome Center, Facility, 101611

3. Job Safety Analysis

This section establishes the processes and procedures to identify hazards and controls using Job Safety Analysis (JSA).

A. Purpose

The section includes the definitions, program responsibilities, and requirements of the JSA Program. Job safety analysis is an integral and proactive part of a continuous improvement process focused on improving employee safety and health. The completed analysis resulting from this process identifies the hazards and the current controls necessary to perform those jobs safely.

B. Scope

This section applies to all PennDOT employees, including temporary employees, engaged in work identified by this program. All work activities are potentially subject to the JSA process. However, the completed JSA documents are not intended to supersede any established safety policies or standard operating procedures.

C. Definitions

- (1) Control: A control is a device, procedure, or practice that reduces the likelihood that a hazard will cause harm or that reduces the severity of the harm. Controls include eliminating the hazard, substitution of materials or methods, engineering solutions, administrative procedures (e.g., training), and Personal Protective Equipment (PPE).
- (2) Hazard: A hazard is the potential for harm. In practical terms, a hazard often is associated with a condition or activity that, if left uncontrolled, can result in an injury or illness.

- (3) Job Safety Analysis (JSA): A method or process for carefully studying and recording each step of a job, identifying existing and potential job hazards (both safety and health), and determining the best way to perform the job or to reduce or eliminate these hazards. A JSA is also commonly referred to as a Job Hazard Analysis (JHA).
- (4) Operation: A collection of work tasks or jobs.
- (5) Risk: The probability of a hazard resulting in an adverse event, injury, or illness.
- (6) Significant: A change in work is significant if additional tasks and/or new hazards have been introduced or additional controls are necessary to control the hazards.
- (7) Task: A separate element of work or a specific work assignment. The terms “job” and “task” are commonly used interchangeably.

E. Program Responsibilities

The most important person in the JSA process is the first line supervisor, who is in constant contact with employees and familiar with the operational hazards in their respective area. Supervisors are in the best position to recognize and correct unsafe acts and conditions as they occur. All employees are expected to follow the guidelines provided within Pub 517- Job Safety Analysis Manual and within Chapter E, Section 3 of this manual. Supervisors are responsible for ensuring compliance with the policy, including initiating the disciplinary action process when appropriate for employees not following the proper procedures.

- (1) Employee Safety and Training Division
 - a. Establishes and provides direction to the districts and Central Office regarding JSA development and assignments.
 - b. Maintains the JSA policy, publication, and related documents.
 - c. Provides technical guidance, training, and assistance to PennDOT.
 - d. Determines and prioritizes job tasks for JSA development based on accident/injury and hazard analysis.
 - e. Provides review and approval on JSA job selection, development requests, and completed drafts.
 - f. Ensures the overall program is evaluated annually for effectiveness and/or updates.
 - g. Develops and maintains the training curriculums for JSA development groups and general awareness training.
- (2) District Executive/Bureau Director
 - a. Provides leadership in establishing and maintaining this policy and program.
 - b. Identifies and provides knowledgeable staff for use on JSA development or review teams as needed.
 - c. Provide resources to the JSA work groups as necessary to carry out their assignments.
- (3) District Safety Coordinators (DSC)
 - a. Provides technical guidance, training, and assistance at the district and county level.
 - b. Assists Managers, Supervisors, and employees in the development of JSAs as assigned by the Employee Safety and Training Division.
 - c. Schedules and facilitates the activities and meetings of the JSA development teams as needed to accomplish assignments.
 - d. Coordinates or provides training to affected employees as outlined in this policy.
 - e. Prepares the final draft JSAs for review by the JSA groups and other district/county managers prior to submission to the Employee Safety and Training Division.

(4) Managers and Supervisors

- a. Ensures JSAs are reviewed with affected employees at least annually.
- b. Ensures employees perform work in accordance with the JSA.
- c. Ensures employees are trained to complete their assigned tasks and trained in the tools or equipment to be used in the completion of the task.
- d. Utilizes the JSAs as outlined under Requirements and Utilization below.
- e. Ensures JSA acknowledgement sheets are signed by the affected employees, maintained, and forwarded as appropriate.
- f. Considers JSAs when evaluating safety performance during Employee Performance Reviews (EPRs).
- g. Review completed/draft JSAs and provides feedback as requested.
- h. Ensures that affected employees receive the necessary development or awareness training.
- i. Participates on the JSA development teams as requested or assigned.

(5) Employees

- a. Complies with all PennDOT safety rules and regulations.
- b. Reviews all job related JSAs at least annually.
- c. Notifies the supervisor regarding any changes in the work process, identified hazards, or controls.
- d. Attends all necessary training or instruction.
- e. Performs work in accordance with the JSA.

F. Program Management and Procedures

(1) JSA Requirements and Utilization

- a. The JSA Manual, Pub 517, is intended to be an integral tool in the performance of the selected jobs or tasks. Due to this importance, Pub 517 (which includes this section and the relevant JSAs) must be maintained at the applicable worksites and/or field operations (e.g. foreman's crew cab, stockpiles, garages, bridge inspection vans, construction offices, etc.).
- b. In addition, all the applicable JSAs shall be reviewed by the affected employees at least annually. However, managers and supervisors are strongly encouraged to seek additional ways to incorporate the JSAs into their routine activities. Additional opportunities for the utilization of JSAs include, but are not limited to, the following:
 - I. Initial training or job instruction for new employees.
 - II. Refresher or awareness training for existing employees.
 - III. Pre-job instruction for infrequent or non-routine jobs.
 - IV. Pre-job safety talks or meetings.
 - V. Revisions to a JSA or changes in processes/equipment.
 - VI. Assist with accident investigation or After Action Reviews (AAR).
 - VII. Benchmarking and evaluating employee safety performance.
 - VIII. Incorporated into other required equipment or job training.

(2) Job Selection

Ideally, a JSA should be conducted for all jobs in the workplace. In most cases, it is not realistic to quickly develop all of the necessary JSAs. Prioritizing which jobs should be analyzed ensures that the most critical jobs are addressed first. Some of the main factors considered when determining the JSA priority for jobs or equipment include:

- a. Accident frequency and severity.
 - b. Accident potential.
 - c. Newly established jobs or processes.
 - d. Modified jobs or changes in equipment.
 - e. Infrequently performed or non-routine jobs.
 - f. Employee recommendations.
- (3) JSA Development
- a. The Employee Safety and Training Division will establish and provide direction to PennDOT regarding JSA development and assignments. The basic process to be used for developing JSAs consists of the following:
 - I. Select/prioritize jobs and communicate JSA assignments.
 - II. Form JSA teams and select experienced and knowledgeable employees to participate.
 - III. Provide instruction to the JSA team members on the methods and techniques for developing JSAs.
 - IV. Observe the task and explain the purpose of your observations.
 - V. Define and record the sequential steps used to complete the job.
 - VI. Review the steps with the observed employees for clarity and agreement.
 - VII. Determine and evaluate the hazards associated with each job step.
 - VIII. If needed, observe the task a second time to focus on the potential hazards or conduct additional research.
 - IX. Schedule meetings with the JSA team as necessary to develop the recommended actions and procedures to address each of the identified hazards.
 - X. Complete the JSA form and review it for completeness and accuracy.
 - XI. Share the findings with knowledgeable employees and managers for feedback and agreement.
 - XII. Provide the completed draft JSA to the Employee Safety and Training Division for final review, approval, and distribution.
 - b. PennDOT managers, supervisors, and members of the JSA teams may initiate or recommend the development of additional JSAs. These additions or recommendations should be based on current accidents/injuries, identified hazards, changes in equipment/processes, or gaps in the JSA program. All requests should be initially forwarded to the DSC for consideration and then forwarded to the Employee Safety and Training Division for review and approval.
 - c. The Employee Safety and Training Division develops, presents, and maintains the Job Safety Analysis Development Training program to guide the JSA development process, including the Job Safety Analysis Development Guide.
 - d. Contact the DSC or Employee Safety and Training Division if additional assistance is needed or for issues requiring specific safety knowledge, training, or experience.
- (4) JSA Updating and Revisions
- a. JSAs should be reviewed and updated on a regular basis and at least annually. Input from managers, supervisors, and employees who regularly perform the job is essential for maintaining accurate and effective JSAs.
 - b. Any revisions or suggestions for improvement should be forwarded to the DSC or Employee Safety and Training Division for consideration.

- c. Additional events that could trigger a review of a JSA include the following:
 - I. After a serious accident, injury, or work-related illness.
 - II. After a close call or near miss that could have resulted in a serious accident/injury.
 - III. Any significant change to a job or process.
 - IV. Significant changes to equipment, materials, or the environment.
 - V. When equipment is severely damaged.

G. Training

(1) Job Safety Analysis Awareness Training (78SAFE000015)

This training consists of classroom instruction and is intended to explain the purpose, application, and basic requirements of the program. This training should be conducted by Employee Safety and Training Division staff and DSCs that are also Certified Instructors.

- a. Initial training must be provided to all affected employees that are assigned tasks for which there is an existing JSA.
- b. Retraining may be conducted, when warranted by the occurrence of an accident or any evidence of an employee's lack of compliance with or understanding of the program.
- c. Course registration and completion must be recorded in LSO.

(2) Job Safety Analysis Training (78SAFE000010)

This training is intended to explain the purpose, application, basic requirements, development and review of the department's job safety analysis (JSA) program. The training will consist of information contained within Pub 517 - JSA Manual with a focus on the recognition and control of workplace hazards. This course is designed to give personnel involved in the JSA review/development an opportunity to understand how to define hazards, implement solutions and understand the protective measures needed to prevent injury and accidents.

- a. Employees that are directly involved in the development of JSAs, assigned by the Employee Safety and Training Division, must attend this training.
- b. Course registration and completion must be recorded in LSO.

(3) Employee reviews of JSAs should be recorded on the acknowledgement page of the JSA form. These records should be maintained locally by the supervisor. Copies may be forwarded to the district or county office, as appropriate.

4. Program Review

- A. Attendance records for training programs in this section will be reviewed periodically to monitor compliance.
- B. Training program content and feedback will be reviewed periodically for continuous improvement and to ensure that all courses are current and relevant.
- C. This chapter will be reviewed annually to ensure that all information is current. Details of the annual review will be documented under Recordkeeping.

5. Recordkeeping

- A. Completed inspections are maintained electronically for the current fiscal year and previous two fiscal years.
- B. Training records must be recorded and maintained in LSO for every employee.
- C. This chapter contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Content
Intro	Original, based on AIPP requirements for Element E
1	PPIM 14-089 Safety Inspection Process for Engineering Districts (Issued 8/21/09 and 7/22/14)
2	PPIM 11-131 Office Safety Inspections (Issued/Effective 7/26/11)
3	PPIM 12-154 Job Safety Analysis (Issued/Effective 12/17/12)
4	Original, based on current practices
5	Original, based on current practices and AIPP requirements for Element H

Chapter F – Industrial Hygiene

Industrial hygiene is defined as the anticipation, recognition, evaluation, and control of environmental factors arising in or from the workplace that have the potential to cause significant discomfort, illness, or impairment for employees. Industrial hygiene includes the development of corrective measures to control health hazards by either reducing or eliminating the exposure. (This definition is from the Fourth Edition of the National Safety Council “Fundamentals of Industrial Hygiene”.)

1. Procedures

When industrial hygiene issues occur (indoor air quality concerns, excessive noise levels, visible mold, etc.) the following procedures apply:

- A. Emergency situations (significant employee exposures, acute illnesses, area/building closures, evacuations, flooding, etc.)
 - (1) Contact the Employee Safety and Training Division immediately.
 - (2) The Employee Safety and Training Division will coordinate communications with the OA/Safety Consultants to request assistance.
- B. Industrial hygiene issues that are easily addressed should be corrected immediately. Examples of such correctable actions are inadequate housekeeping, HVAC repairs/maintenance, noise abatement, etc.
- C. Issues that are not easily addressed must be investigated and corrected. This chapter explains the process whereby investigations occur, who will be conducting them, and includes reporting and recording procedures. To aid in the investigations, an Industrial Hygiene Evaluation Report (P-31 form), has been developed. The report allots space for answers to specific questions, and includes a detailed guideline explaining how to answer each question, with sample answers to a few of the questions.
- D. For non-emergency situations, the following steps should be taken to assist the District Safety Coordinator (DSC) and/or Employee Safety and Training Division.
 - (1) Districts and counties:
 - a. Employees must notify their supervisor/manager as soon as they are aware of any industrial hygiene related concerns.
 - b. Upon notification, the supervisor/manager will notify their DSC.
 - c. Upon notification, the DSC and District Facility Administrator shall jointly visit the affected site.
 - d. The DSC must complete the P-31 form on-site and provide a copy to the Employee Safety and Training Division.
 - e. Upon receipt of the report, the Employee Safety and Training Division may do one of the following:
 - I. Make recommendations to resolve the issue. If so, skip to step 8 (within the P-31 form).
 - II. Contact the commonwealth safety consultant to request a thorough analysis of the concern.
 - III. Coordinate with Facilities Management Division (FMD) and other contacts in the Bureau of Maintenance and Bureau of Operations to identify current contracts through which services, including the thorough analysis of the concern, may be obtained.
 - f. If contacted, the commonwealth safety consultant or other contracted service provider may either make recommendations, or conduct an on-site visit and provide a report of their findings, recommendations, and corrective actions.

- g. Recommendations and reports from a commonwealth safety consultant or other contracted service provider will be sent to the Employee Safety and Training Division, who will share it with the FMD and DSC.
 - h. The FMD will ensure recommendations and/or corrective actions are achieved and will maintain communication with the Employee Safety and Training Division through the completion of the project.
 - i. The findings, recommendations, and corrective actions of all industrial hygiene investigations will be communicated to affected employee(s) as needed.
- (2) All other organizations:
- a. Employees must notify their manager/supervisor of any industrial hygiene related concern.
 - b. Upon notification, the manager/supervisor will notify the Employee Safety and Training Division.
 - c. If applicable, the Employee Safety and Training Division will inform the FMD about the issue.
 - d. Representatives from the Employee Safety and Training Division and FMD may conduct an on-site visit and complete the P-31 form.
 - e. Following the site visit, the Employee Safety and Training Division may do one of the following:
 - I. Make recommendations to resolve the issue. If so, skip to step 9 (within the P-31 form).
 - II. Contact the commonwealth safety consultant to request a thorough analysis of the concern.
 - III. Coordinate with FMD and other contacts in the Bureau of Maintenance and Bureau of Operations to identify current contracts through which services, including the thorough analysis of the concern, may be obtained.
 - f. If contacted, the commonwealth safety consultant or other contracted service provider may conduct an on-site visit and complete an in-depth report offering related findings, recommendations, and corrective actions.
 - g. Following their evaluation, the commonwealth safety consultant will provide an in-depth report offering related findings, recommendations and corrective actions.
 - h. The report will be sent to the Employee Safety and Training Division and findings will be shared with FMD.
 - i. FMD will ensure recommendations are achieved and will maintain communication with the Employee Safety and Training Division through the completion of the project.
 - j. The findings, recommendations, and corrective actions of all industrial hygiene investigations will be communicated to affected employee(s) as needed.

2. Training

As needed, the Employee Safety and Training Division will ensure awareness, recognition, or other training is provided to employees (maintenance staff, custodial crews, affected employees, etc.).

3. Required Communications

- A. A memorandum is distributed by email every two years during the month of June to inform all employees of the procedures for reporting industrial hygiene concerns. The email includes instructions to supervisors and managers to review this information with their employees and to post a copy of that memorandum on all employee bulletin boards.

- B. When industrial hygiene issues are reported and investigated, the findings, recommendations, and corrective actions will be communicated to all affected employees, as appropriate, and to unions, upon request.

4. Program Review

- A. This chapter will be reviewed annually to ensure that all information is current.
- B. Methods, communications, and services will be evaluated annually for compliance and effectiveness.
- C. Details of the annual review will be documented under Recordkeeping.

5. Recordkeeping

- A. The Employee Safety and Training Division must maintain the Industrial Hygiene Evaluation Report (P-31).
- B. The Employee Safety and Training Division must maintain a file for each industrial hygiene issue that is reported, to include the completed P-31, monitoring results, recommendations, and corrective actions.
- C. The Employee Safety and Training Division and/or Human Resource Field Operations Division must maintain a confidential medical file for each employee that has a documented exposure for the duration of their employment plus 30 years.
- D. The Employee Safety and Training Division must maintain a copy of the memorandum and email used to distribute it, as evidence that this required communication has been implemented and sustained.
- E. This chapter contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Content
Intro-2	PPIM 11-138, Industrial Hygiene Reporting Procedures (Issue/Effective Date: 09/22/11) and original, based on current practices
3-4	Original, based on AIPP requirements for Element F and current practices
5	PPIM 11-138 and original, based on AIPP requirements for Element F

Chapter G – Industrial Health

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Industrial health services address the physical, mental and social wellness of employees in relation to the job and working environment. These services are provided both before and after an accident or illness has occurred. The results of these services are intended to produce recommendations for the identification, control, or elimination of workplace health hazards.

Industrial health related services are generally administered by more than one individual or program area. For purposes of compliance, the Employee Safety and Training Division is provided with or has access to the necessary information and records to ensure the adequacy of the Industrial Health Services Program.

Preventative services are offered in response to an identified need or benefit. Most of these services are voluntary, although some services could be made mandatory as a condition of continued employment to address performance issues.

1. Medical Surveillance

This section establishes criteria for occupational testing of field employees required to work with substances and/or materials which may have an impact on their health, and identifies the job classes or work assignments for which specific testing is required, including the types of tests to be performed and the frequency of those tests.

A. Required Medical Surveillance

Medical surveillance testing is required based on exposure to occupational hazards. Employees engaged in the following duties require testing, as specified. This list is not all inclusive. Contact your District Safety Coordinators (DSC) or the Employee Safety and Training Division for additional information.

(1) Painting Application or Removal (30 days or more)

a. Annual Testing

- I. Blood Toluene
- II. Blood Chromium
- III. Blood Lead (if exposed to lead-based paint)
- IV. Blood Zinc Protoporphyrin (if exposed to lead-based paint)
- V. Complete Blood Count
- VI. Liver Function Study
- VII. Urinalysis

b. Every Three Years

- I. Lateral and PA Chest X-Ray
- II. Pulmonary Function Test

- (2) Welding Operation (30 days or more)
 - a. Baseline and Annual Testing
 - I. Blood Toluene
 - II. Blood Chromium
 - III. Blood Lead
 - IV. Blood Zinc Protoporphyrin
 - V. Liver Function Study
- (3) Herbicide Application (seasonal crews), or employees working 7.5 hrs for 5 consecutive days
 - a. Annual Testing
 - I. Complete Blood Count
 - II. Liver Function Study
 - b. Every Three Years
 - I. Lateral and PA Chest X-Ray
 - II. Pulmonary Function Test
- (4) Asbestos Materials Handling or Removal (performs asbestos inspections or process naturally occurring asbestos samples)
 - a. Annual Testing
 - I. Pulmonary Function Test
 - II. Physical and Health History
 - b. Lateral and PA chest x-ray with a "B Read" shall be performed at minimum according to the frequency in the following table.

Frequency of PA Chest X-ray with a "B Read"			
Years Since First Exposure	Age of Employee		
	15 to 35	35+ to 45	45+
0 to 10	Every 5 Years	Every 5 Years	Every 5 Years
10+	Every 5 Years	Every 2 Years	Every Year

- (5) Employees that will be required to use a negative-pressure respirator must complete the following before using the respirator for the first time and annually thereafter.
 - a. Medical Evaluation Questionnaire
 - b. Pulmonary Function Test
- (6) Construction Inspectors that must enter a containment area for lead paint abatement at least one time per year, in which the exposure level is likely to be at or above 30ug/cubic meter, must have the following blood tests two times within a 365-day period (once during the work season just before the risk of exposure to airborne lead is the greatest and once as soon as possible after the final entry into the containment area).
 - a. Blood Lead (PbB)
 - b. Blood Zinc Protoporphyrin (ZPP) Procedures
- (7) Employees exposed to respirable crystalline silica for 30 or more days a year where engineering controls are not adequate to keep exposure levels below the action level of 25 µg/m³ calculated as an 8-hour TWA shall comply with the requirements of Section 1.A.5 of this protocol in addition to completing the following every three years.
 - a. Lateral and PA chest x-ray with a "B Read."
 - b. Testing for latent tuberculosis infection (only required during the initial exam).

B. Procedures

Initial or baseline medical monitoring shall be conducted upon initial assignment of duties or no later than 30 days of assignment. Employees for which medical surveillance is required shall be directed to submit to occupational testing. Any available medical facility that performs occupational tests under the direction of a licensed physician can be utilized. Additional testing may be required as directed by the physician upon completion of initial screening.

- (1) The district/county shall complete Part A of the Medical Surveillance Test Form (P-10), specifying the services requested. The employee must present the completed form to the service provider before services are rendered. This form advises the service provider where to send the results and the bill.
- (2) The service provider shall complete Part B of the P-10 and return the form along with test results and interpretation to the address noted on the form. Invoicing for services rendered shall be sent to the address noted on the form for payment.
- (3) Employees refusing to submit to testing shall be required to sign the Medical Surveillance Test Declination Form (P-11).
- (4) P-10 and Medical Surveillance Test Declination Form (P-11) are in the following folder: [P:\penndot shared\FORMS PennDOT Authorized](#)
- (5) If the service provider indicates normal levels, no further action is necessary other than retaining a copy of the test results and of the completed P-10 form in the employee's medical file.
- (6) If the service provider indicates the employee requires further testing or employee cannot safely return to work without further testing or evaluation, the DSC shall notify the employee immediately. The employee will be contacted by phone and a copy of the test results and the completed copy of the P-10 shall be sent to the employee. The DSC will also contact the County Manager immediately to advise that the employee must be removed from the job or circumstances which may be causing these elevated levels. The employee will be referred to their primary care physician to determine what follow-up tests and corrective actions are necessary.
- (7) The DSC will assess all job safety factors involved, the work environment and PPE in use, or any other pertinent factors to reduce or eliminate exposure.
- (8) Travel time for the initial appointment at the service provider's office, the time spent at the appointment, and travel time back to the work site will be charged to administrative overhead on the employee's payroll. The employee should request documentation from the service provider confirming their time of departure, which will be submitted along with the payroll.
- (9) All costs associated with medical surveillance testing will be borne by the district or county. Medical documents for employees must be filed in a confidential medical file maintained at the Human Resource Field Operations Division. Medical documents must not be maintained at the county office. A permanent record of all tests must be maintained for the duration of employment plus 30 years and kept on file in the employee's personal medical file.
- (10) If it is necessary for an employee to use their personal vehicle for travel to and from the appointment, mileage will be paid at the appropriate rate. This mileage must be claimed for reimbursement on a travel expense voucher at the end of the expense period in which it occurs.

2. Workers' Compensation

An employee injured at work may be entitled to wage loss and medical benefits. Once an employee reports an injury, their supervisor files an injury report and the agency HR office investigates the injury. This results in the filing of a claim. The claim is approved or denied by the commonwealth's claims administrator. Approved claims are managed jointly by the agency (Manager/Clerk of reporting county) and the claims administrator (OA injury).

- A. The Governor's Office of Administration manages the workers' compensation program for all commonwealth agencies and is responsible for:
- (1) Providing new employees with required program notifications.
 - (2) Ensuring claims are filed timely and through ESS when possible.
 - (3) Investigating new reports of a work-related injury or accident.
 - (4) Working with the commonwealth's claims administrator, the agency, and the employee to expedite a return to work.
 - (5) Ensuring that the appropriate letters have been sent and the appropriate steps have been taken on each claim.
 - (6) Maintaining and utilizing forms, tools and letter templates.
- B. Claims Administrator
- (1) Workers' compensation benefits are authorized by the commonwealth's claims administrators. Medical bills related to a work-related injury should be sent to:

Inservco Insurance Services, Inc.
P.O. Box 3899
Harrisburg, PA 17105-3899
 - (2) Designated Health Care Providers (Physician Panels)
 - a. The commonwealth's workers' compensation third party administrator has expert medical providers on contract to assist employees with the diagnosis, treatment, and rehabilitation of their workplace injuries or illnesses.
 - b. Must be posted in each work location for employees to choose a provider for the treatment of workplace injuries or illnesses. In addition to medical treatment, the prompt and efficient payment of claims and medical bills associated with the injury is also the responsibility of the administrator.
 - c. Find lists of panel physicians by county at <http://panels.homsinc.net/viewPanel.php>.
- C. Resources
- (1) ImPyracle: Inservco's claims information system which workers' compensation coordinators may use to monitor claims. A password is needed; contact the Office of Administration at ra-benwc@pa.gov.
 - (2) Workers' Compensation Alerts: changes to systems procedures related to workers' compensation injuries that are beneficial to Workers' Compensation Advisors and Workers' Compensation Service Representatives.
 - (3) Safety program: information on injury prevention.
 - (4) Leave benefits: information on other types of leave including SPF.
 - (5) Workers' Compensation Coordinators List: contact information for agency workers' compensation coordinators.
- D. Policies and Manuals
- (1) Injury Leave Manual (M530.2)
 - (2) The Workers' Compensation Act and the Occupational Disease Act
 - (3) Management Directive 505.7 Personnel Rules
- E. Contact Information
- The OA-Human Resources' Bureau of Employee Absences and Safety is available to assist with workers' compensation program questions and can be contacted at ra-benwc@pa.gov or call 717-346-4667.

F. Return to Work Policy

- (1) An employee must not be allowed to return to work after an injury without a written release from the treating physician. If the employee has physical restrictions that prevent them from performing their full duty job, refer to the Transitional Duty section below.
- (2) The Human Resource Office must be notified immediately upon an employee's return to work from a work-related injury absence, so that the third party administrator can be notified.
- (3) A CDL operator returning from a work-related injury absence of more than 30 consecutive calendar days may return to work pending a pre-employment drug test result, but may not perform safety sensitive functions until a negative test result is received. The supervisor must immediately send the employee for a pre-employment drug test upon return to work.

G. Transitional Duty Program for Work-Related Injuries

- (1) This section applies only to work-related injuries. For non-work-related injuries, consult with PennDOT's disabilities service coordinator. This policy shall be applied consistently with federal laws and commonwealth policies.
- (2) PennDOT is committed to providing transitional duty when operationally feasible for an employee who is unable to perform their normal assignment(s) due to a work-related injury, but capable of fulfilling the requirements of a transitional work assignment for a limited period of time not to exceed 90 calendar days. Requests for extensions beyond 90 calendar days require prior approval from the Office of Administration, Human Resource Service Center, and Work-related Injury Services (WRIS).
- (3) The utilization of a transitional duty program is a very valuable tool for reducing workers' compensation costs and enhances the organization's ability to remain effective. In many cases, the earlier an injured employee gets back into the workplace, even on transitional duty, the more likely they are to return to full duty work sooner. All organizations, including managers/supervisors are expected to cooperate in accomplishing this goal and comply with the requirements outlined in this policy.
- (4) Transitional work is any job, task, function or combination of tasks or functions that an employee with restrictions may perform safely and without the risk of re-injury. In cases where an employee's restrictions preclude performing their pre-injury job (or a particular aspect of the job), every reasonable effort shall be made to identify a productive job assignment that will accommodate temporary restrictions as identified by the treating physician. An employee on transitional duty may be utilized for overtime work unless physically restricted by the treating physician. However, the employee will not qualify for overtime equalization if the nature of the overtime work is not consistent with work performed as part of the employee's regular job duties. Overtime equalization is an attempt to balance overtime between or among employees within the same job classification.
- (5) In addition to the regularly assigned duties one is still able to perform, transitional duties might include, but would not necessarily be limited to: Clerical/Receptionist/Administrative Duties, Parts Runner, Radio Operator, Flagging Duties, Custodial, Yard/Building Maintenance, Inventory, Litter Pickup, Equipment Cleanup and Shadow Vehicle Operator. Non-Civil Service employees may not be assigned Civil Service duties. No higher-level work may be assigned as transitional work per the Management Directive 530.2, Injury Leave Manual.
- (6) A copy of the Return to Work Status Report is located on the Safety Portal link: <https://sportal.dot.pa.gov/highway/safety/Accidents%20and%20Near%20Misses/Forms/AllItems.aspx> (included in the Grab and Go for Work-Related Injuries) must be given to the panel/treating physician to ensure his/her awareness of PennDOT's transitional duty program.

- (7) If the criteria for transitional duty are met and suitable transitional duty work is available, the manager/supervisor shall then contact WRIS who shall direct the employee to return to work. The manager/supervisor shall then contact WRIS specialist assigned to the injury claim to coordinate a formal letter to be sent to the injured employee detailing the transitional duty assignment prescribed by the treating physician. If the WRIS specialist receives medical documentation prior to the contact from the injured employee's manager/supervisor releasing the injured employee to work, then it is the responsibility of the injured employee to contact their manager/supervisor to coordinate this process.
- (8) This section (G) must be reviewed with an injured employee before they are placed on a transitional duty assignment by either their manager/supervisor or WRIS.
- (9) Listed below are the responsibilities of the injured employee, the County Manager/Bureau Director/Manager, and WRIS when utilizing the transitional duty program for work-related injuries.
- (10) Responsibilities of the Injured Employee:
 - a. Notify the manager/supervisor any time the panel/treating physician identifies or changes physical restrictions that affect the employee's job duties.
 - b. Return to active employment on transitional duty when approved.
 - c. CDL operators must submit to required drug and alcohol testing in accordance with the CDL Drug & Alcohol Testing Program as per Protocol 13 and at the direction of the manager/supervisor.
 - d. Notify the manager/supervisor immediately upon release to full duty by submitting a completed physician/practitioner's certificate.
 - e. Attend meetings with the manager/supervisor to discuss current status and anticipated or actual date of return to full duty at least weekly.
 - f. Have the physician complete the CDL Employee Prescription Medications Form (Form 708) according to the procedures outlined in CDL Manual 505.5.
 - g. Submit a request for leave in advance of medical appointments.
 - h. Attend all follow-up doctors' visits. Provide an updated physician/practitioner's certificate every 30 days or as requested, preferably using the Commonwealth's Return to Work Status Report form.
 - i. Report any recurrence of the injury to the manager/supervisor immediately.
- (11) Responsibilities of the County Manager/Bureau Director/Manager/Supervisor of the Injured Employee:
 - a. Make a determination as to whether transitional duty is operationally feasible. If available and feasible, develop a description of duties for the injured employee to accommodate the restrictions. If unsure about a description of duties for the injured based off specific work instructions, contact WRIS for assistance.
 - b. Ensure compliance with the CDL Drug and Alcohol Testing Program. A CDL employee is required to submit to a pre-employment drug test if absent for 30 or more consecutive calendar days and unavailable for random testing. Verification of a negative pre-employment test result by OA is needed before being placed on safety sensitive duties.
 - c. Immediately upon the employee's return, meet and review transitional duties with the injured employee. Arrange for employee training for the transitional duty assignment as needed. Communicate with the WRIS to ensure that they are aware of the transitional duty assignment. The specialist will send a formal letter to the employee documenting the transitional duty assignment.

- d. Forward medical documentation to WRIS at ra-OAinjury@pa.gov upon receipt from the employee. Notify WRIS when doctor's visits are missed or the employee is not continuing treatment for the work-related injury. Ensure that the employee enters leave for all appointments and reasonable travel time during scheduled working hours.
 - e. Maintain contact with the employee on transitional duty at least weekly. Review and document work status accordingly on the Return to Work Status Report form.
 - f. Inform management and WRIS when the employee returns to unrestricted full duty work or if the employee suffers a recurrence.
 - g. Ensure the transitional duty policy is implemented consistently throughout the assigned organizational unit.
 - h. In consultation with WRIS, terminate transitional duty when that duty is no longer operationally feasible.
- (12) Responsibilities of Work-related Injury Services:
- a. Discuss return to work options with the County Manager/Bureau Director/Manager and/or Supervisor upon receipt of medical restrictions. It may be necessary to review the employee's position description and verify with the manager/supervisor if the employee's medical restrictions require a transitional duty assignment. Review all transitional duty assignments.
 - b. Review and approve/disapprove all transitional duty assignments. Provide a copy to the Infrastructure and Economic Development Human Resource Delivery Center (IEDHRDC) upon approval or request for extension within 24 hours prior to the expiration of the initial 90-day assignment.
 - c. Coordinate the issuance of the appropriate employee notification letters:
 - I. When an employee is medically approved to return to transitional duty and work is available, direct the issuance of the Return to Work: Modified Duties Letter.
 - II. When an employee is medically approved to return to full duty work, issue a Return to Full Duty Letter.
 - III. When an employee is removed from transitional duty due to various reasons.
 - IV. A copy of these letters will be provided to the Supervisor and/or Reviewing Officer.
 - d. Ensure the county manager/bureau director/manager follow responsibilities outlined in the previous section for CDL pre-employment drug testing.
 - e. Ensure managers/supervisors are aware of and properly utilizing all required work-related injury forms and documents.
 - f. Monitor the injured worker's progress while working transitional duty by maintaining contact with the manager/supervisor periodically and/or after follow-up medical visits.
 - g. Monitor the length of transitional duty assignments to ensure compliance with this policy. Issue updated return to work letters as appropriate due to changes in restrictions, duties or extensions/termination of transitional duties.
- (13) Other Guidelines
- a. For a probationary status employee who has a work-related injury, it may be advisable to extend the probationary period. Consult with the Employee Relations and Workforce Support Coordinator in the Human Resource Service Center.
 - b. For an employee with regular status, an interim evaluation(s) should be completed if the transitional duties last 90 calendar days or longer conducted by WRIS.

3. State Employee Assistance Program (SEAP)

The State Employee Assistance Program (SEAP) is a free assessment and referral service that is designed to assist commonwealth employees and their family members in resolving a wide variety of personal problems that may lead to deteriorating employee job performance. SEAP offers services related to substance abuse, mental health issues, family issues, financial issues, legal services, and mediation.

- A. The Governor's Office of Administration provides the following services for agencies:
- (1) Policies related to the program and protocols for use of SEAP services are described in Management Directive 505.22 State Employee Assistance Program
 - (2) Manual 505.3 State Employee Assistance Program
 - (3) Management Directive 505.25 Substance Abuse in the Workplace.
- B. SEAP can help agencies to manage issues in the workplace through:
- (1) Critical Incident Stress Debriefings (CISD) following traumatic workplace incidents to assist employees in dealing with the resulting emotional stress.
 - (2) Employer-Based Referrals.
An agency, with OA approval, can require an employee to access SEAP services or face employment consequences. Those situations include:
 - a. Commercial Driver's License (CDL) referral
 - b. Independent Psychological Evaluation (IPE)
 - c. Licensed Professional Referral (LPR)
 - d. Self-Disclosure Referral
 - e. Condition Of Continued Employment (COCE) referral.
 - (3) Refer to the SEAP manual for more information on these services and how to make an employer based referral.
- C. Tools and Resources:
- (1) The following are available online at: <https://www.hrm.oa.pa.gov/Pages/default.aspx>
 - a. SEAP manual (M505.3)
 - b. Training curricula
 - c. Substance abuse in the workplace information
 - d. HIPAA Notice of Privacy Practices
 - e. SEAP Complaint Form
 - f. SEAP HIPAA Authorization Form
 - g. SEAP Coordinators List (Central Office)
 - h. SEAP Coordinators List (Field Locations)
 - (2) All employees may access resources that promote health and wellness on a variety of topics at the following website: www.liveandworkwell.com.
The access code is: Pennsylvania.
 - (3) Additional information can also be found using the link P:\PENNDOT_SHARED\BHR EO Section\SEAP Program\Reference Materials
- D. Training
- (1) All employees, supervisors, and union representatives receive ongoing refresher training on SEAP every two years, at a minimum, appropriate to their positions.

- (2) There are four ready-to-use training sessions designed to be offered by agencies. Each comes as a complete package, with a script, an outline, a PowerPoint presentation, and all handouts, exercises and activities.
 - a. General Information (1.5-2.5 hours)
For all employees to familiarize them with the benefits available to them through SEAP.
 - b. Drug-Free Workplace (1-2 hours)
For all employees to familiarize them with the policies on substances in the workplace, as well as the treatments and services available for individuals with substance use issues.
 - c. Fitness for Duty (1.25-2 hours)
For supervisors, managers, and union officials to discuss the guidelines for assessing an employee's fitness for duty and the procedures for dealing with an employee who is unfit for duty.
 - d. SEAP Supervisor-Manager (2-3 hours)
For supervisors, managers, and union officials to discuss the use of SEAP resources and the Condition of Continued Employment.
- E. Contact Information
The PennDOT SEAP Program Manager is available to assist and can be contacted at 717-787-8575 or ra-workplacesupportservices@pa.gov.
 - (1) Employee Referrals: 1-800-692-7459
 - (2) TTY Employee Referrals: 1-800-824-4306
 - (3) Supervisor, Manager, or Union Consultations: 1-800-662-9206

4. Workplace Violence Prevention and Response

- A. The Governor's Office of Administration coordinates workplace violence prevention and response, including taking steps to prevent incidents, responding to incidents, and coordinating post-incident activities to return the workplace to a normal state of operations.
- B. Management Directives and Manuals
 - (1) MD205.33 Workplace Violence
 - (2) MD720.7 Bomb Threats and Suspicious Packages
 - (3) Manual 505.6 Agency Guide to Workplace Violence Prevention and Response
- C. Training
 - (1) All managers, supervisors, and employees receive the required training on an annual basis.
 - (2) Building a Safe Workplace: Preventing Workplace Violence curriculum:
 - a. Employee Training includes a Trainer's Guide and Presentation
 - b. Supervisor Training includes Reference Manual, Trainer's Guide and Presentation
- D. Post-Incident Response
 - (1) Following any incident, the agency should report it via the Workplace Violence Online Incident Report. There are guidelines for completing the Workplace Violence Online Incident Report.
 - (2) In the event of any injury resulting from an incident, follow all applicable workers' compensation rules and protocols.
 - (3) Consider utilizing or promoting services available through the State Employee Assistance Program (SEAP) such as critical incident stress debriefings or individual counseling.
- E. Incident Response
The following procedures are to be followed in dealing with incidents of workplace violence:
 - (1) Incident information must be handled in a confidential manner.

- (2) Employees who are victims or witnesses of workplace violence should use good judgment by trying to diffuse the situation and remove themselves from potential danger or further physical harm.
 - a. Remain calm and courteous while emphasizing nonviolent ways to resolve the conflict.
 - b. Do not respond with aggressive behaviors that will escalate or intensify the incident.
 - c. Terminate the contact with the individual as soon as possible and immediately report the incident to your supervisor.
 - d. In serious emergency situations, report the incident to your emergency 911 center for police and/or medical assistance in accordance with your emergency response plan, prior to notifying your supervisor.
 - (3) Employees are encouraged to notify their manager/supervisor of a Protection from Abuse (PFA) or court-issued restraining orders and to provide a copy to local law enforcement. The employee should work with their manager and supervisor to take appropriate steps to minimize the opportunity for the legally identified perpetrator to contact or visit the employee's work site.
 - (4) Supervisors must ensure that the incident is documented based on information obtained from the employee(s) and a Reporting Data Sheet for Incidents of Workplace Violence must be submitted through the chain of command to the Human Resource Field Operations Division or Infrastructure and Economic Development Human Resource Delivery Center (IEDHRDC).
 - (5) Human Resources will oversee the investigation of the incident.
 - (6) Human Resources and local management must follow-up on reports of threatening and/or violent behavior that have occurred in their units to ensure that the incident is properly resolved and ensure compliance with and enforcement of all policies.
- F. Responsibilities
- (1) Supervisors must:
 - a. Be alert to and address undesirable or unexplainable changes in behavior with their employees in a respectful, objective, and confidential manner.
 - b. Keep their employees informed of the benefits available to them through SEAP and when appropriate, urge their employee(s) to contact SEAP.
 - c. Intervene early on and initiate disciplinary or other action(s) commensurate with the behavior in question.
 - d. Initiate the investigation and documentation of workplace violence incidents involving their subordinate(s).
 - e. Consider contacting the SEAP Consultation Line (1-800-662-9206) if/when they may benefit from the assistance from a mental health professional that is familiar with PennDOT and commonwealth policies.
 - (2) Human Resources and Management must:
 - a. Ensure that a thorough investigation is completed, documented, and forwarded to the Governor's Office of Administration.
 - b. Follow-up on reports of threatening and/or violent behavior that have occurred in their unit(s) to ensure that the incident is properly resolved and all PennDOT and commonwealth policies have been complied with and enforced.
- G. Domestic Violence
- (1) The commonwealth is committed to providing a coordinated system of support and intervention for employees when a situation of domestic violence is self-disclosed. Employees who are victims of domestic violence or have filed a Protection from Abuse Order should be encouraged to self-disclose, so that they can be offered support and assistance at the workplace.

- (2) Employees who self-disclose should be provided with information about the State Employee Assistance Program (SEAP).

H. Contact Information

The Employee Relations and Workforce Support Division is available to assist and can be contacted at 1-717-787-8575 or ra-workplacesupportservices@pa.gov.

5. Training and Communications

- A. Specific staff responsibilities are reviewed upon the assignment of duties by the supervisor or human resources office.
- B. Information regarding industrial health programs is available in the Safety Policy Handbook (Pub 445), which is distributed with training to new employees during orientation and to all employees upon the issuance of each new edition.

6. Program Review

- A. This chapter will be reviewed annually to ensure that all information is current.
- B. Details of the annual review will be documented under Recordkeeping.
- C. The programs and services described in this chapter will be reviewed annually to determine if they are adequate to address the physical, mental, and social wellness of employees in relation to their workplace.

7. Recordkeeping

- A. Employee training records in LSO may be referenced as evidence that employees were trained on, notified of, or provided access to information regarding the programs described in this chapter, as required.
- B. This chapter contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Content
Introduction	Original, based on AIPP requirements for Element G
1	PPIM 09-107, Medical Surveillance Guidelines (Issued 8/21/07 and 10/5/09) and Pub 445 (10-13) Page 27
2	Original, based on current practices and the OA website, and Pub 445 (10-13) page 17
2F	PPIM 13-086, Transitional Duty Program for Work-Related Injuries (Issue/ Effective Date: 1/23/13)
3	Original, based on current practices, the OA website, and current Management Directives.
4A-D, G, H	Original, based on current practices, the OA website, and current Management Directives.
4E-F	PPIM 10-022, Workplace Violence Policy (Issued 5/16/03 and 3/15/10)
5-7	Original, based on AIPP requirements for Element G

Chapter H – Training

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A positive safety culture is promoted through training programs described in the MESH and the incorporation of employee safety and health topics in training programs that are run by other internal organizations. This chapter identifies the various types and frequencies of safety and health related training to enhance employee's knowledge, understanding, skills, attitudes, and motivation concerning their health and safety in the workplace.

1. Policy

- A. In this chapter, a training matrix identifies training programs that are mandatory for certain positions or roles, based on legal requirements or the responsibilities of the position or role, and training programs that are optional, based on individual interest.
- B. All new employees and the employees changing jobs or responsibilities must receive a job specific safety orientation before performing their assigned duties.
- C. Employees must receive periodic safety trainings on a continual or as needed basis, to enhance their knowledge and attitudes toward safety policies and procedures, and their skills and motivation to ensure compliance.
- D. Supervisors must ensure that employees are educated on worksite or hazard specific safety procedures by utilizing various methods such as safety talks, hands-on training, mentoring, and formal certification training.
- E. Some training programs are mandatory for employees, based on several factors including:
 - (1) Applicable laws and regulations
 - (2) AIPP requirements
 - (3) Commonwealth and agency policies
 - (4) Types of operations or work environments
 - (5) Hazards that employees are or may be exposed to, and the associated risk and severity
- F. Workplace safety inspections, employee safety suggestions, accident investigations, injury analysis, and program evaluations are used to assess training needs and the effectiveness of existing training programs.

2. Procedures for New Employees

A. On-Boarding

The Human Resources Service Center owns an electronic onboarding system with one page devoted to employee safety. This site provides a link to PennDOT's Safety Policy Statement and policy prohibiting the use of an Interactive Wireless Communication Device (IWCD) while driving, unless it is a hands-free device.

B. In-Processing

The Infrastructure and Economic Development Human Resource Delivery Center provides a checklist and instructions guide that identify all requirements for staff members that are responsible for in-processing new employees. This checklist includes the Safety Partnership Agreement. For more information, refer to PPIM 10-131 Inprocessing Instructions for Employees in the Department.

C. New Employee Orientation Program (NEOP)

The Infrastructure and Economic Development Human Resource Delivery Center owns NEOP, and coordinates with other internal organizations to incorporate and present material pertaining to their respective areas. The Employee Safety and Training Division incorporates a clear message about workplace safety, including the distribution of a copy of the Safety Policy Handbook (Pub 445) to each participant, an overview of the content of the handbook with an emphasis on each employee's responsibility, and an explanation of the accident reporting and emergency response procedures.

D. Safety Policy Handbook

The goal of this training is to continue to work towards providing a safer workplace and a safety first culture for PennDOT. Employees will be provided guidance and policy direction to ensure their own safety and that of their coworkers.

3. Training Program Matrix for Employee Safety and Health

This table identifies AIPP training programs and the corresponding chapter in the MESH that contains the information and requirements for these programs.

Chapter	Course	Type	LSO Code
E	Job Safety Analysis - Development	Classroom	78SAFE000010
G	SEAP Drug Free Workplace	Web	ENSEAPDFW
	Workplace Violence Prevention	Web	ENWPV
H	OSHA 10-Hour Construction Safety & Health	Classroom	78TECH400586
	OSHA 30 Hour - Construction	Classroom	78BHR3200217
	Safety Stand Down Day	Classroom	78SAFE000019
	Safety Training for Senior Leaders	Web	ENSAFESNR
	Supervisor Safety Training	Web	81SUPERSAFE
I	Employee Emergency Awareness	Web	78BHR3200248
K	Safety Committee Training	Classroom	78BHR3200079
	• Hazard Identification	Classroom	78BHR3200061
	• Accident Investigation	Classroom	78BHR3200033
	• Safety Committee Operations	Classroom	78BHR3200077
	• Drug Free Workplace	Classroom	78BHR3200014
	Safety Committee Refresher Training	Classroom	78BHR3200078
	Safety Committee Refresher Training	Web	81SFTYCMT
L	Safety Policy Handbook	Web	78SAFE000003
M	Incident Analysis and Corrective Action	Web	81InAnlCrrAc

Chapter	Course	Type	LSO Code
N	First Aid/CPR/AED	Classroom	78SAFE000023
P4	Sight Conservation	Web	78SAFE000006
P6	SDS Pro Database and WIM	Classroom	78SAFE000013
	Right to Know Hazardous Substances	Classroom	78BHR3200072
	Right to Know - Chemicals in the Workplace	Web	ENRTKCHMWKPL
P7	Confined Space - Construction	Classroom	78BHR3200043
	Confined Space - Main/Bridge/Design	Classroom	78BHR3200053
P10	Bloodborne Pathogens	Classroom	78BHR3200331
P12	Preventing Slips, Trips, and Falls	Classroom	78BHR3200240
	Preventing Slips, Trips, and Falls	Web	78GMSLIPS
P13	Safe Driver Training	Classroom	78BHR3200213
	Safe Driver Training Instructor Led	Classroom	78SAFE000031
	Safe Driver Training - Train the Trainer	Classroom	78BHR3200212
P14	Ladder Safety Training	Classroom	78BHR3200198
	Ladder Safety	Web	78SAFE000007
P15	Fall Protection - Authorized User	Classroom	78SAFE000012
	Fall Protection - Competent Person	Classroom	78SAFE000014
	Scaffolding - Competent Person	Web	78SAFE000029
	Scaffolding - Awareness	Web	78SAFE000030
P20	Preventing Lifting and Back Injuries	Classroom	78BHR3200241
	Preventing Lifting and Back Injuries	Web	78GMLIFTING

4. OSHA Training

The purpose of this training is not to empower employees to enforce OSHA standards on contractors, but to ensure their own safety while inspecting a construction site and to recognize when a contractor should be notified of a safety concern at the worksite.

A. OSHA 10-Hour Course

This training provides a basic overview of the following topics: Introduction to OSHA, Cranes, Fall Protection, Electrical, Personal Protective Equipment, Scaffolds, Materials Handling, Stairs/Ladders, Power Tools, and Excavations.

- (1) This training must be provided to all construction field employees to equip them with general knowledge of the most hazardous aspects of the construction industry.
 - a. New construction field employees should attend the 10-hour OSHA training within six months of hire.
 - b. Refresher training should occur as needed.
- (2) This training may be instructor led or web based.
- (3) The districts should pursue the 10-hour course through a contract with an OSHA certified instructor. District Training Coordinators and Fiscal Office staff should be involved to appropriately procure a proper training/trainer.

B. OSHA 30-Hour Course

This equips construction field supervisors and managers with a more comprehensive knowledge of OSHA regulations, workplace hazards, and injury prevention, to answer employees' questions regarding the 10-hour training they received. The instructor led course will be coordinated centrally every two years for districts to identify and send a minimum of two supervisors and/or managers to attend this course.

5. Daily Safety Talks

A. Policy

- (1) At the beginning of each shift, supervisors are required to review the specific work activity of the day with their assigned crew and document the subject of the daily safety discussions on the crew payroll.
- (2) Discussion should be related to the work to be performed and safe operating procedures that apply.
- (3) Additional safety talks are encouraged, as conditions or work assignments change.
- (4) The daily safety talk can be done utilizing the Job Safety Analysis Manual, Pub 517.

B. Pub 247 - PennDOT Daily Safety Talk Book

This publication is intended to be a resource for all employees to be informed of some of the possible risks associated with certain work activities and for supervisors/foremen to use for daily safety discussions. It is not a policy manual. Using any applicable sections of Pub 247 as a source of reference, a safety discussion can be formulated. To help ensure consistency of use, supervisors are encouraged to use the instruction template and the table of contents to find safety content that relates to the day's scheduled activities. It also identifies some websites for additional resources that can be accessed through the internet.

C. Safety talks may consist of pertinent information from resources other than Pub 247, including but not limited to:

- (1) Pub 517 - Job Safety Analysis Manual
- (2) Pub 445 - Safety Policy Handbook
- (3) Pub 213 - Temporary Traffic Control Guidelines
- (4) Pub 23 - Maintenance Manual
- (5) Safety Data Sheets (SDS) for work involving the use of or exposure to products containing hazardous substances.

6. Safety Stand Down Days

These events provide a forum for safety information to be communicated on a regular and consistent basis, to increase employee awareness, and to promote the reduction of workplace injuries and fleet accidents. Each County Maintenance Office must host a Safety Stand Down Day two times a year and all employees are expected to attend.

Program implementation requirements include:

- A. An appropriate amount of time must be allotted to cover safety topics that are relative to the employees' job duties.
- B. Ideally the day will be coordinated to coincide with Summer and Winter maintenance operations and may be accomplished in conjunction with Bid Day. Per the Master Agreement, seasons are designated as the Winter Maintenance Season, November 1 - March 31, and Summer Maintenance Season, April 1 - October 31. This will allow for a focus on safety as it relates to current operations.
- C. County Maintenance Managers are responsible for taking a lead role in the planning of each Safety Stand Down Day and in ensuring that they occur semi-annually. It is preferred that they are available to present information to emphasize the importance of a Safety Culture.
- D. District Safety Coordinators (DSC) are available to assist with training and statistical information concerning accident rates.
- E. Training materials are located at the Safety Training Resources Portal.
- F. Agendas must cover appropriate safety issues. A minimum of four hours of safety related training must be incorporated into the agenda per the guidelines listed below. (Times may be adjusted to allow for breaks, lunch, and bidding, if held in conjunction with Bid Day.)

- (1) Welcome/Continental Breakfast (30 minutes)
 - (2) Focus on Safety Awareness (45 minutes)
 - a. Reason for this Event
 - b. Current Issues
 - c. Related Experiences/Stories
 - d. Safety Culture
 - e. Safety Recognition
 - (3) Review Job Safety Analysis pertaining to upcoming operations (30 minutes)
 - (4) Recent accidents overview, trends and statistics (45 minutes)
 - (5) Include discussion of what could have been done differently to prevent the accidents.
 - (6) Learning Activities (90 minutes) – Example: Employees may be broken into groups and taken through various trainings such as: Slips, Trips and Fall Prevention, Proper Lifting, Heat Exhaustion Prevention, Seasonal Issues, Work Zone Safety, Proper Backing, etc.
- G. A continental breakfast may be purchased for participants in accordance with established purchasing policy/procedures.
- (1) Refer to Procurement Directive 17-02.
- H. County Maintenance Managers and Field Business Partners must formally invite, in writing, all AFSCME Local Union Officials, Paid Union Staff Representatives, and District Council Directors to these events and keep track of the invitations sent.

7. Training Programs that Incorporate Safety

As the subject matter expert for employee safety and health, the Employee Safety and Training Division develops and presents material for the following training programs owned by other internal organizations:

- A. Bureau of Maintenance and Bureau of Operations
- (1) Acting Highway Foremen Academy
This program is an abbreviated version of Leadership Academy for Supervisors (LAS) that may be assigned to act as a foreman. (The minimum time allotment is 60 minutes.)
 - (2) Highway Foremen Academy
The purpose of this training is to increase foremen awareness and understanding of the hazards and methods for addressing them in the various operations foremen will be assigned to complete with their crew. During the training, safety topics such as: Accident and Near Miss Investigation, Trench and Excavation Safety, Fall Protection, Ladder Safety, Job Safety Analysis, Tree Pruning and Felling Safety, Confined Space Entry, and Personal Protective Equipment are covered, at least at an introductory level. (The minimum time allotment is 3.5 hours.)
 - (3) Assistant Highway Maintenance Manager Academy
Objective of this training is to increase participants' understanding of their role in managing safety and how that plays out in their responsibilities of job planning, participation in reinforcing safety, and responsiveness to subordinate's concerns, needs, and requests. The training includes safety topics such as: identifying and assessing hazards, exposure, risks, and severity; hierarchy of controls; responsibility for hazard management, and some examples and resources for safety. (The minimum time allotment is 105 minutes.)
 - (4) Highway Maintenance Manager 101
Purpose of this training is to increase participants' understanding of their leadership role for safety and the importance of their participation in reinforcing safety and responsiveness to subordinate's concerns, needs, and requests. In this training, participants are introduced to the topics of hierarchy of controls, responsibility for hazard management, managing the

response to catastrophic accidents, monitoring the leading and trailing indicators for safety within their organization, and examples and resources of safety. (The minimum time allotment is 90 minutes.)

(5) Maintenance and Executive Development Program (MEDP)

This annual event is designed to assist in the development of professional maintenance management employees in the districts and counties, and offers a forum for consistency in training, the transfer of valuable information regarding policies and procedures, and an open forum for discussion and feedback. The safety portion may include, but is not limited to the topics listed below. (The minimum time allotment is 30 minutes.)

- a. Annual report to middle management regarding accident statistics, trends, general observations, and recommendations
- b. Best practices
- c. Status reports for current initiatives
- d. Details regarding any new initiatives

B. Infrastructure and Economic Development Human Resource Delivery Center (IEDHRDC)

(1) Leadership Academy for Supervisors (LAS)

This training is designed for supervisors to understand what is expected from them in organizations as the primary influencers for safety. Topics of discussion are: assessing risk and promoting safety, safety policies and working rules, injury and fleet accident response and investigation, identifying and addressing hazards in the workplace, accident and injury prevention, and personal protective equipment. (The minimum time allotment is 2.5 hours.)

(2) Supervisory Skills Series for Foremen

The training is designed to enhance the understanding of foremen's leadership role and responsibilities of building a positive safety culture, conducting effective safety talks, identifying and correcting hazards in the workplace, reporting and documenting accidents and near misses, maintaining a safe work site so that foremen are prepared for a safety inspection, and meeting Right-to-Know Law requirements. (The minimum time allotment is 2.5 hours.)

(3) Human Resource Field Operations Division Conference

This annual event is designed to bring Field HR Business Partners, and a member or two of their staff, together to receive reports, information, and program updates from representatives of the Infrastructure and Economic Development Human Resource Delivery Center (IEDHRDC), and to exchange information, including best practices. The Employee Safety and Training Division typically develops and presents a breakout session consisting of accident investigation case studies and lessons learned. (The minimum time allotment is 105 minutes.)

8. Employee Safety and Training Division Staff and District Safety Coordinators (DSC)

A. Advanced Safety Certificate, National Safety Council

Employee Safety and Training Division staff and DSCs that do not possess credentials recognized by the Department of Labor and Industry are required to obtain the Advanced Safety Certificate (ASC) within two years of becoming a DSC. The ASC is obtained by completing the Principals of Occupational Safety and Health course and at least 5.2 Continuing Education Units (CEU) from the other courses listed below:

- (1) Fundamentals of Industrial Hygiene (2.6 CEU)
- (2) Safety Management Techniques (2.6 CEU)
- (3) Safety Training Methods (2.6 CEU)
- (4) Incident Investigation (.65 CEU)
- (5) Job Safety Analysis (.65 CEU)

- (6) Safety Inspections (.65 CEU)
 - (7) Team Safety (.65 CEU)
 - (8) Ergonomics (.65 CEU)
- B. Governor’s Occupational Safety and Health (GOSH) Conference
Employee Safety and Training Division staff and DSCs are encouraged to attend this annual conference designed to educate and empower safety professionals, employers, and employees to reduce accidents and injuries for workers across all industries and occupations by presenting a series of workshops that address current best practices for safety.
- C. OA Safety Coordinator Open Training Sessions
Safety targeted training sessions organized and presented by the OA safety consultants open to Employee Safety and Training Division staff and DSCs to attend.

9. PennDOT Enterprise SharePoint Portal

The Employee Safety and Training Division provides access to approved training and resources to supplement training on the following intranet site(s):

<https://spportal.dot.pa.gov/Administration/trainingResources/SitePages/Home.aspx>

<https://spportal.dot.pa.gov/highway/safety/SSDD%20Trainings/Forms/AllItems.aspx>

10. Program Review

- A. Attendance records for courses listed on the Training Program Matrix will be reviewed periodically to monitor compliance.
- B. Training program content and feedback will be reviewed periodically for continuous improvement and to ensure that all courses are current and relevant.
- C. This chapter will be reviewed annually to ensure that all information is current. Details of the annual review will be documented under Recordkeeping.
- D. Information gathered through accident and near miss investigations, hazard assessments, safety inspections, and employee input; and changes in laws, regulations, and policies are reviewed regularly to determine if additional training is needed and/or required.

11. Recordkeeping

- A. Every training program has a code, attendance is recorded in LSO, and training records are available in LSO for periodic review and audit.
- B. The Employee Safety and Training Division maintains the curriculum electronically for all training programs it develops and presents in the division shared drive.
- C. This chapter contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Content
Intro	Original, based on AIPP requirements for Element H
1-3	Original, based on current practices and AIPP requirements for Element H
4	PPIM 12-152 OSHA Training for Construction (Issued 11/27/12)
5	PPIM 13-159 Daily Safety Talks - PUB 247 (Issued 5/7/13)
6	PPIM 12-144 Safety Stand-Down Days (Issued 3/9/12) PPIM 15-172 Union Invitation to Safety Stand Down Days (Issued 1/8/15)
7-9	Original, based on existing training courses/materials and current practices
10-11	Original, based on current practices and AIPP requirements for Element H

Chapter I – Emergency Response

This chapter addresses the development, maintenance, and implementation of response plans to a variety of emergencies and the established precautions for mail handling, to ensure compliance with the requirements in management directives 205.38 Emergency Evacuation and Safe Assembly and 720.7 Bomb Threats and Suspicious Packages.

1. Emergency Response Plans

A. Policy

PennDOT is committed to enhancing employee safety and security by establishing procedures for responding to emergency situations that employees may encounter in a commonwealth owned or leased building. All buildings that are occupied by PennDOT employees must have a written Emergency Response Plan (ERP) that meets the requirements of this memorandum. Employees are responsible to understand and follow all applicable precautionary measures and emergency response procedures described in this memorandum and in the ERP for the building they occupy. In the event of an emergency, employees are required to dial 911 immediately.

B. Purpose

This section establishes policy, responsibilities, and procedures to ensure an appropriate response to potential or actual emergency situations, including the evacuation and safe assembly of employees and visitors from all commonwealth owned and leased buildings occupied by PennDOT employees.

C. Definitions

- (1) **Assembly Area:** A safe location outside of the building where all employees and visitors are to congregate and be accounted for in the event of a building evacuation.
- (2) **Authority Having Jurisdiction:** The authorized representative of an organization (e.g. Fire or Police Department) responsible for leading the provision of emergency response services.
- (3) **Building Evacuation Team:** A group of employees who in most cases have voluntarily accepted roles and responsibilities to facilitate the evacuation process (some roles, such as building fire marshal, may be assigned based on position within the organization). Building evacuation teams should include the following:
 - a. **Assembly Area Leader:** Reports head counts to and receives updates from the Incident Commander and relays information from Incident Commander to the lead manager at the location.
 - b. **Building Fire Marshal:** Coordinates the Building Evacuation Team and is the point of contact for emergency personnel and reports the number of persons requiring assistance by staging area and in total to the incident commander.
 - c. **Exit Guards:** Report to their assigned exit to verify safe egress for that exit, hold door open and communicate to promote an efficient evacuation, and then exit when entire floor is clear.
 - d. **Floor Chiefs:** Gather information from searchers and exit guards regarding the evacuation status of all floor occupants including going to each staging area to account for any persons requiring assistance and report this information to the Building Fire Marshal.
 - e. **Incident Commander:** Makes the decisions during an emergency situation, gathers information and accounts for all building occupants during an evacuation, and relays all pertinent information to the Authority Having Jurisdiction upon arrival; this may be the Building Fire Marshall.

- f. Searchers: Notify the Floor Chief of their availability, conduct a floor search of all work areas and rooms to ensure an efficient evacuation process, take note of persons refusing or unable to leave the building, and report findings to the Floor Chief.
 - (4) Designated Staging Area: An area in a building that has been established as the location where employees who need assistance to evacuate the building will wait to receive assistance during an evacuation.
 - (5) Incident Command Post: The location of the Incident Commander where information will be coordinated with emergency responders, the assembly area leader, and the lead manager at that location.
- D. Responsibilities
- (1) Employee Safety and Training Division
 - a. Ensure all occupied PennDOT facilities have a written ERP that meets the requirements of this policy.
 - b. Provide necessary guidance and updates on emergency response procedures as needed.
 - (2) Bureau Director/District Executive/County Manager
 - a. Designate an Incident Commander and/or Building Fire Marshal for each building that is occupied by your employees. The Employee Safety and Training Division will identify/designate these positions for the Keystone Building.
 - b. Ensure employees receive a copy of the ERP and training on the emergency recognition, notification, and response procedures for your facility.
 - c. Arrange instruction on mail handling precautions for employees who regularly handle mail and packages.
 - (3) Building Fire Marshal
 - a. Ensure a written ERP is created and kept up to date, reviewed annually at a minimum, for your facility in accordance with the ERP Checklist.
 - b. Coordinate with relevant local authorities and the building manager/landlord to establish effective emergency evacuation procedures.
 - c. Establish and maintain a current Building Evacuation Team roster.
 - d. Coordinate and document emergency evacuation drills and events.
 - e. Responsible for completed Building Evacuation After Action Review Report Form within 24-48 hours of the drill/event. Please refer to Section H in this protocol for specific details on how to complete this form and process.
- E. Procedures
- Use the Emergency Response Plan Checklist to ensure that all required components are incorporated in the development or revision of the ERP for each building. For examples of content that meet these requirements, the PennDOT Keystone Building Emergency Response Plan is accessible on the safety portal under the Emergency Response Plans tab.

Emergency Response Plan Checklist	
Required Components	✓
(1) Description of methods by which employees will be notified of the need to evacuate a building (e.g. fire alarm, public address system, visual/verbal notification, etc.)	<input type="checkbox"/>
(2) Descriptions of unique building features or dynamics such as sprinkler systems, location of emergency exits and fire extinguishers, areas where alarms can't be heard/seen, volatile chemical storage areas, multiple tenants, restricted areas, etc.	<input type="checkbox"/>
(3) Procedures to evacuate and account for all employees and visitors and designated staging areas for individuals who require assistance. Also include instructions for securing confidential information, locking computers, taking along personal items in case one is not permitted to return to the building, and prohibiting smoking and cell phone use during an evacuation.	<input type="checkbox"/>
(4) Floor plans indicating evacuation routes and emergency exits inside of the building, as well as assembly areas and the incident command post outside of the building.	<input type="checkbox"/>
(5) Precautions, special instructions, and emergency response procedures for specific emergency events including fire, medical emergency, bomb threat, suspicious package or letter, active shooter, hazardous atmosphere, severe weather events, and natural disasters.	<input type="checkbox"/>
(6) Duties assigned to each Building Evacuation Team member role including: Incident Commander, Building Fire Marshal, Floor Chiefs, Searchers, Exit Guards and Assembly Area Leader.	<input type="checkbox"/>
(7) Training requirements and methods to ensure adequate Building Evacuation Team membership is maintained.	<input type="checkbox"/>
(8) Contact information of key management, emergency response services, building manager/landlord, and Building Evacuation Team members.	<input type="checkbox"/>
(9) Commonwealth of Pennsylvania Bomb Threat Data Card (STD-499)	<input type="checkbox"/>

F. Training

Building Evacuation Team members should attend an annual training session to review their roles and responsibilities and the evacuation procedures as outlined in the ERP for their building. All employees should be provided with the emergency evacuation and assembly procedures during new employee orientation and annual evacuation training thereafter.

G. Building Evacuation Drills

Emergency evacuation drills should be conducted annually or more frequently where required by regulations. The Building Fire Marshal should meet with key evacuation team members within 24-48 hours after a building evacuation to identify and resolve any safety, procedural, or communication issues encountered during the evacuation.

H. Building Evacuation After Action Review Report Form (AAR's) and AAR Report Completion Process

When a building has been evacuated for any reason (drill or actual event), a Building Evacuation After Action Review is required to review the evacuation process and determine if the current measures that are in place worked as designed. This includes assigned designated employees' specific roles, radio equipment, emergency lighting and visual and audio alarm systems.

(1) District/County Office Fire Marshal Responsibilities:

- a. Assess the evacuation procedure when evacuation occurs.
- b. Hold an After Action Review within 24-48 hours of drill or actual event.
- c. Ensure that all assigned emergency evacuation team members are present for the After Action Review.

- d. Complete the Building Evacuation After Action Review Report Form (P-9) to assess:
 - I. Evacuation team responsiveness
 - II. Building alarm or public address (PA) system functions
 - III. Exit accessibility
 - IV. Assembly area and employee access/reporting location
 - V. Roll call process
 - VI. Communication equipment (radio) functionality or issues
 - VII. Compliance to the written evacuation plan
 - VIII. Identify and document problems and causal factors, corrective actions to be taken to resolve concerns, responsible person to implement corrective actions and identified deadlines/due dates
 - e. Submit the Building Evacuation After Action Review Report Form (P-9) electronically to the District Safety Coordinator within 24-48 hours of the drill/event.
- (2) District Safety Coordinator responsibilities:
- a. Submit the Building Evacuation After Action Review Report Form (P-9) electronically to the RA-PDEESAFETYCOORD@pa.gov mailbox within 48 hours of receipt.
 - b. Participate in any additional evacuation team meetings and/or confirm corrective actions have been implemented.
 - c. Provide updates to the Employee Safety and Training Division pertaining to any items listed on the Building Evacuation After Action Review Report Form (P-9) upon request.

2. Mail Handling Procedures

Precautionary measures should be taken by all employees regarding the processing and handling of mail. These recommendations apply to all persons who process and handle mail, from mail room staff who sort and deliver mail, to administrative staff who distribute mail, to the individuals to whom mail is addressed. While the risk of exposure to biological, chemical, or other hazards is minimal, employees who handle mail should exercise caution.

- A. Precautions for opening mail:
- (1) Observe all mail for suspicious characteristics.
 - (2) Do not open mail with your hands/fingers; use a letter opener or other device.
 - (3) Open mail with the top of the envelope positioned away from your body.
 - (4) Once opened, turn the envelope upside down over a trash can and pull open one side (if any foreign substance is inside, it should fall out).
 - (5) Do not handle mail with your bare hands; wear gloves (either latex or non-allergenic) available for purchase through the statewide contract.
 - (6) Always wash your hands using soap and hot water after handling mail.
 - (7) Do not open mail in areas of high ventilation or in front of a fan.
- B. Characteristics of suspicious letters or packages:
- (1) Mailed from a foreign country or no return address.
 - (2) No postmark or postmark that does not match the return address.
 - (3) Excessive postage or no postage (not applicable to internal mail).
 - (4) Addressed to a title only (such as Director) or has the wrong title associated with an individual's name, although in some agencies this may be routine.
 - (5) Excessive weight, rigid, bulky, lopsided, or uneven.

- (6) Misspelled words, poorly typed, or handwritten.
 - (7) Excessive tape or string.
 - (8) Restrictive markings (personal, confidential, etc.)
 - (9) Odor (do not put your face near any packages or letters).
 - (10) Oily stains or discoloration.
 - (11) Protruding wires, aluminum foil, or other objects.
 - (12) Ticking sound.
- C. If you find a suspicious letter or package:
- (1) Do not open, move, shake, or smell the item.
 - (2) If the item is already being handled, place the item in a plastic bag or other type of container to prevent leakage of the contents (if a container is not available, cover the item with anything that is available, such as a piece of paper, trash can, clothing, etc.). Wash your hands using soap and hot water.
 - (3) Immediately notify your supervisor or other manager. Management will determine whether the item should be reported to law enforcement authorities. If management determines that the item should be opened, proceed using the mail opening precautions.

3. Severe Weather

A. Hurricanes, Thunderstorms, and Flash Floods

- (1) Postpone outdoor activities if severe storms are likely to occur. If thunder is heard, lightning strikes are possible. Many people struck by lightning are not in the area where rain is occurring. If outside, seek shelter immediately and avoid windows.
- (2) Monitor the sky for signs of a storm or listen for thunder in the distance which could predict a storm is on the way.
- (3) Take shelter in a large building or in a vehicle with the windows closed if a severe thunderstorm warning is issued.
 - a. Avoid high ground; water; tall, isolated trees; and metal objects, such as fences or heavy equipment, in extreme cases where little to no shelter is available. Carports, dugouts and sheds are NOT safe.
- (4) Use a radio or television to monitor for additional announcements and information through local stations.
- (5) Remain indoors and stay away from windows during a hurricane unless directed to evacuate.
- (6) Be prepared to evacuate at a moment's notice, following the identified evacuation route as recommended.
- (7) Remember when driving: Turn around, don't drown! If water is above ankle deep, stop, turn around and go another way. Avoid walking or driving through any flooded areas since the water depth and speed are difficult to judge.

B. TORNADOS

- (1) Before planning outdoor work, check the weather forecast to determine if bad weather may be coming and when it is expected. If possible, work closer to shelter during times when strong winds are expected and ensure co-workers are aware of the area where work is taking place.
- (2) In the event of a tornado warning, do not attempt to leave the building. There is high risk of being hurt by flying debris.

- (3) Move away from windows, doors, atriums, lobbies, and exterior walls. Do not enter or use elevators. Close the doors of exterior offices after leaving them. Go to interior rooms, hallways, center corridors, or stairwells. Sit down putting the head as close to the knees as possible or kneel protecting the head.
- (4) If you are trapped in an exterior office, seek protection under a desk and/or away from the window.
- (5) Do not use a telephone to get information or advice.
- (6) If you are in a moving vehicle, a trailer, or mobile home, get out immediately and go to the lowest floor of a sturdy, nearby building or a storm shelter.
- (7) Because of the unpredictability of tornadoes, if caught outside, seek low-lying ground immediately. Stay away from large objects including trees that may fall, or objects that can become projectiles.

C. Earthquakes

- (1) If outdoors during an earthquake, remain outdoors and go to an open area.
- (2) If indoors during an earthquake, move away from any shelving, windows, or exterior doors. Take cover underneath a sturdy desk or table. If there is neither, brace in an interior doorway. Do not attempt to leave the building as most injuries occur from falling debris when attempting to leave or enter a building.
- (3) If in a moving vehicle during an earthquake, stop as quickly as safety permits and remain in the vehicle. Avoid stopping on or under overpasses or utility wires.
- (4) Do not leave the protected area immediately. Be prepared for potential aftershocks. In the event of a severe weather or natural disaster emergency, remain calm and alert to your surroundings and co-workers.
- (5) Stay tuned to radio and television for further announcements or instructions.

4. Program Review

- A. This chapter will be reviewed annually to ensure that all information is current.
- B. Details of the annual review will be documented under Recordkeeping.

5. Recordkeeping

This chapter contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Content
Introduction	Original, based on AIPP requirements for Element I
1-2	PPIM 16-026 (Issued/Effective 10/3/16)
3-4	Original, based on AIPP requirements for Element I

Chapter J – Suggestion Programs

Identifying and eliminating unsafe acts or conditions are key factors in ensuring the safety of all employees. Employees are encouraged to take initiative and actively engage in reporting and addressing workplace hazards. The safety and health suggestion program has been established for all work locations to include three methods for employees to submit concerns and ideas.

1. Methods and Procedures for Submitting Suggestions

A. Chain of Command

- (1) Employees are encouraged to submit suggestions and concerns directly to their supervisor or manager (the chain of command), a District Safety Coordinator and a safety committee member, especially those that might require a more urgent or timely response.
- (2) Supervisors are responsible to consider each suggestion and concern that they receive and to ensure a timely response.

B. Safety and Health Suggestion Form (P-33)

- (1) This form is available for organizations to use, at their discretion, for employees to report suggestions for improving the health and safety of their work environment, to report unsafe acts and/or hazards, and to suggest ideas for performing tasks safer.
- (2) Organizations that use this form must establish the following to ensure effectiveness:
 - a. Identify the individuals responsible for reviewing the completed forms and responding to each submission.
 - b. Establish procedures and timelines for the review of and response to each submission.
 - c. Establish and utilize a tracking mechanism for each submission and response. (Be prepared to share this information with the Employee Safety and Training Division upon request.)
 - d. Send out a communication annually to all employees that:
 - I. Notifies them of the form and the process for completing and submitting it. (Encourage them to include their name and contact information, so that they may be contacted for clarification and advised of the outcome.)
 - II. Advises them of the procedures and timelines for the review of and response to each submission.

C. IdeaLink 20/20

Employees are encouraged to submit ideas that will help PennDOT save money, improve morale, create efficiency, make your workplace safer, improve customer service or generate revenue at <https://www.idealink.pa.gov/>. The scope of this suggestion program extends beyond employee safety and is administrated by the Executive Office, which includes a tracking mechanism for the suggestions and responses. The Employee Safety and Training Division provides input on responses to ideas that pertain to employee safety.

2. Responses

- A. Employee opinions and involvement in the safety process are valued, therefore suggestions are reviewed promptly, thoroughly, and objectively. Regardless of the method that was used to submit a suggestion or concern, submissions will be reviewed by a District Safety Coordinator, the Safety Committee at regularly scheduled meetings, and/or the Employee Safety and Training Division to ensure a timely response.
- B. Employees who provide their name or contact information on their submission will receive a direct response to their concerns or suggestions. Responses to anonymous suggestions are posted or communicated in a manner that is accessible to all employees. When appropriate, senior management and affected employees are notified of changes that result.

3. Communications

- A. Employees are notified of the details of this suggestion program and participation is encouraged:
- (1) At new employee orientation.
 - (2) Via memo, email, bulletin board posting, or other written communication, to all employees annually.
 - (3) Via email or memo to all District Safety Coordinators (DSC) annually, including a reminder to ensure that the suggestion programs are effectively implemented in the districts and counties.

4. Program Review

- A. This chapter will be reviewed annually to ensure that all information is current.
- B. Details of the annual review will be documented under Recordkeeping.

5. Recordkeeping

- A. Evidence of compliance with the communications requirements will be maintained for the previous two years, as follows:
- (1) LSO records for New Employee Orientation.
 - (2) A copy of the annual notification to all employees regarding the suggestion programs and a record of its distribution.
- B. This chapter contains all new information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Content
Introduction	Original, based on AIPP requirements for Element J
1	Original, based on current practices
2-5	Original, based on AIPP requirements for Element J

Chapter K – Safety Committees

This chapter establishes guidelines for safety committees to ensure beneficial outcomes from safety committee meetings. Safety committees are a key component of the workplace safety and health program and efforts. Safety committees ensure safety and health issues are treated as an integral function at PennDOT. The purpose of the safety committee is to regularly bring workers and management together in a non-adversarial, cooperative effort to promote safety and health in the workplace. Committees are empowered to routinely identify and recommend solutions to senior management for PennDOT's safety and health related issues.

1. Requirements

- A. Each county is required to maintain a safety committee.
- B. Each district is required to establish and maintain a district-wide safety committee consisting of representatives from each county, district office and the District Safety Coordinator (DSC).
- C. County Maintenance Managers and Field HR Business Partners must formally invite, in writing, all AFSCME Local Union Officials, Paid Union Staff Representatives, and District Council Directors to safety committee meetings and keep track of the invitations sent.
- D. Safety committees must, at a minimum, meet the following criteria:
 - (1) Have an equal representation of both management and union employees when possible. Note: Equal (50/50) management and employee representation becomes a mandatory requirement for safety committees seeking recognition from the Department of Labor and Industry (L&I).
 - (2) Meet at least once each quarter.
 - (3) Represent and review the safety and health concerns of employees at all work locations.
 - (4) Set annual committee goals and objectives by June 30th, prior to the start of the next fiscal year. The DSC must submit District-wide committee goals and objectives to the Employee Safety and Training Division by placing them into the following folder: <P:\PENNDOTSHARED\Highway Administration\Employee Safety Division\Safety Committees\Goals and Objectives>
 - (5) Ensure minutes are recorded. The DSC shall place an electronic copy of district-wide safety committee minutes in the following folder within 10 days following the date of the meeting. <P:\PENNDOT SHARED\Highway Administration\Employee Safety Division\Safety Committees\Minutes>
 - (6) Communicate the committee's accomplishments and status of goals to senior management.
 - (7) Communicate committee agendas, meeting minutes and safety and health-related information with management, safety committee members and employees.
 - (8) Assist in the identification and correction of workplace hazards.
 - (9) Review and/or investigate injuries/accidents and provide recommendations to prevent recurrences.
 - (10) Post copies of meeting minutes in prominent places.
 - (11) Review safety suggestions.
- E. DSC should attend district-wide and county safety committee meetings and they are responsible for reviewing the county's goals and objectives.

F. Training**(1) Safety Committee Training (78BHR3200079)**

- a. This classroom training was created by the commonwealth's contracted safety consultants, is maintained by the Employee Safety and Training Division, and includes the following three segments, which can be presented and tracked separately using the codes listed below, or all at once using the code above.
 - I. Hazard Identification (78BHR3200061)
 - II. Accident Investigation (78BHR3200033)
 - III. Safety Committee Operations (78BHR3200077)
 - IV. Drug Free Workplace (78BHR3200014)
- b. Only credentialed Accident and Illness Prevention Service Providers that are Certified Instructors are authorized to conduct this training.
- c. District-wide safety committee members must complete this training program.

(2) Safety Committee Refresher Training

Periodic refresher training must be provided to committee members as needed to enhance the knowledge and effectiveness of the committee.

- a. Classroom (78BHR3200078)
- b. Web-Based (81SFTYCMT)

(3) Training registration and completion must be recorded in LSO.**2. Program Review**

- A. Training records will be reviewed periodically to monitor compliance.
- B. This chapter will be reviewed annually to ensure that all information is current.
- C. Details of the annual review will be documented under Recordkeeping.

3. Recordkeeping

This chapter contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Content
Intro - 1	PPIM 11-133 Guidelines for Safety Committees (Issued 7/20/10 and 7/6/11) PPIM 15-172 Union Invitation to Safety Committee Meetings (Issued 1/8/15)
2-3	Original, based on AIPP requirements for Element K

Chapter L – Recognition, Rules, and Enforcement

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This chapter describes how PennDOT reinforces its commitment to providing a safe work environment through established written safety rules and enforcement procedures, and employee recognition.

1. Compliance with Safety Policies

This section addresses awareness and compliance with safety policies.

- A. PennDOT working rules have been in place since 1980 and provide appropriate consequences for non-compliance with safety rules.
 - (1) Members of management are expected to comply with and enforce these rules.
 - (2) All supervisors and employees are expected to comply with these policies.
- B. PennDOT's injury and collision reports indicate that compliance with safety rules can prevent or reduce the severity of injuries and fleet accidents. Here are some examples:
 - (1) Seat belts must always be worn when a vehicle is being operated and while occupying a stationary vehicle within a work zone. Between 1970 and 2022, 32 employees were killed in vehicle collisions and 16 employees were not wearing a seat belt when they were killed. Due to our risk history, failure to wear seat belts must be considered a major work rule violation in accordance with PennDOT's working rules.

EXCEPTION: If manufacturer recommendations on the use of seat belts and shoulder harnesses during operations differ from PennDOT policy, seat belts and shoulder harnesses are to be worn in accordance with manufacturer recommendations when operating PennDOT vehicles and equipment.
 - (2) Additional Seat Belt Use for Paint Trucks
 - a. Operators and passengers shall wear seat belts and shoulder harnesses (if equipped) whenever the painting vehicle travels to the next painting site at speeds exceeding 20 mph. Alternately, painting operators shall move to the cab and be secured by those safety belts and harnesses if the distance to the next job exceeds one mile. Operators must wear properly secured safety belts at their working stations if:
 - I. They are not operating the controls while standing or
 - II. They can easily reach the controls while seated
 - b. If employees are not actively engaged in the painting operation and are traveling at speeds exceeding 20 mph, then the employee(s)/operator(s) are not permitted to be in the back enclosed cab and shall reposition to the front enclosed cab of the paint truck, supply truck or foreman vehicle for safety purposes and shall wear seat belts provided.

- (3) Work zone protection is required for all highway operations in accordance with Pub 213 (Temporary Traffic Control Guidelines). Between 1970 and 2022, 22 employees were killed by work zone intrusions. The failure to use required work zone protection must be considered a major work rule violation in accordance with PennDOT's working rules.
- (4) A circle of safety must be completed every time a vehicle is moved. Backing vehicles must remain in gear while moving. Vehicles with inoperative back-up alarms must be taken out of service until the alarm is in working condition. Between 1970 and 2022, 15 employees were killed by backing PennDOT vehicles, three were killed falling off vehicles/equipment, and three were killed due to disabled safety devices. The failure to follow these procedures must be considered a major work rule violation in accordance with PennDOT's working rules.
- (5) Employees are not permitted to ride on vehicles and equipment unless specifically designed for the purpose of transporting employees. Only those personnel required to operate a piece of equipment and actively engaged in the operation of that equipment are permitted on that equipment while it is in motion. (Employees are "actively engaged in the operation of equipment" when that equipment is actively performing the specific function it was designed to perform, such as a paver actively applying asphalt.) If active engagement in the operation of equipment is suspended briefly while the equipment is in motion to reposition, the personnel required to operate it may remain on it as long as the speed and configuration of the equipment and the positioning of the employees are the same as when the equipment is actively performing its function.
 - a. During active instruction, a certified operator instructor or the foreman will be considered actively engaged in the operation of equipment only on self-propelled pavers, wideners, milling machines and stone chippers. No other equipment is designed with a relatively safe place for the instructor to be on the equipment while it is in motion.
 - b. Only vehicles with an enclosed cab that are equipped with seating and a seat belt for each occupant are permitted to be utilized to transport employees when they are not actively engaged in the operation of equipment. A crew cab is one example of a vehicle permitted for use to transport staff.
 - c. Equipment shall not be used to transport other employees from one location to another for a matter of convenience. If any employee is observed riding on equipment inappropriately, the employee(s) will be subject to disciplinary action.
 - d. Employees shall follow the manufacturer's equipment specific instructions for seat belt use even when equipment has a rollover protective structure (ROPS). ROPS will be evaluated (if available from the manufacturer) when purchasing new equipment.
- (6) Any vehicle or unit of equipment that has been determined unsafe or illegal to operate, must be removed from service and repaired, in accordance with the Pub 177 (Equipment Maintenance and Management Policies Manual).
- (7) Do not remove seat belts that are original equipment.
- (8) It will be the responsibility of the employees' supervisor/manager to educate employees on the safe use of equipment with and without seat belts.
- (9) Daily safety talks must be provided to crew employees and the instructions must be related to the specific risks associated with the work operation.
- (10) Employees must use a three point contact when mounting and dismounting construction vehicles and equipment.
- (11) Personal Protective Equipment (PPE) must be worn in accordance with Protocol 2.
- (12) Animals and pets shall not be brought to state government owned/leased property or vehicles for other than official purposes. Service dogs or other service animals used to guide or assist persons with disabilities are exempt (Protocol 2).

2. Major and Minor Work Rule Violations

PennDOT has established work rules which include safety rules. Listed below are definitions of major and minor work rule violations, and examples of safety-related violations which fall under these definitions.

A. Minor Working Rule Violations

Rule violations that have little effect on the continuity, efficiency, and safety of work, but which cannot be tolerated, may be termed minor rule violations.

- (1) Minor safety rule violations can result in either verbal or written warnings being entered in your record as well as a suspension or more stringent disciplinary action if they continue after verbal and written warnings.
- (2) Depending on the circumstances, a suspension or more stringent action may be taken even for the first offense.
- (3) Examples of minor safety-related working rule violations include, but are not limited to:
 - a. Failing to immediately report illness or injury occurring on the job to your supervisor.
 - b. Refusing medical attention when supervisor deems it necessary.
 - c. Refusing to seek medical attention for an injured employee who requests medical attention.
 - d. Using equipment for purposes other than its designed use.
 - e. Committing or allowing minor violations of safety rules, including unsafe acts and failure to use PPE.

B. Major Working Rule Violations

Major offenses are any violations of PennDOT safety rules of such degree that continued employment may not be desirable. These include willfully, deliberately, or repeatedly committing, or allowing others to commit, violations of PennDOT working rules and policies, and instances where there is evidence of disregard of proper safety practices and precautions.

- (1) Major rule violations may subject an employee to immediate suspension or discharge without warning.
- (2) Examples of major safety related working rule violations include, but are not limited to:
 - a. Failing to comply with proper work zone traffic controls.
 - b. Failing to use seat belts.
 - c. Operating any equipment in which the safety features have been removed or disabled.
 - d. Violations of the policy prohibiting employees from riding on vehicles and equipment.
 - e. Having repeated injuries and/or fleet/equipment accidents that resulted from a safety violation.
 - f. Fighting (any employee directly involved).
 - g. Possessing unauthorized firearms or other dangerous weapons on PennDOT premises or during working hours.
 - h. Bringing intoxicants or controlled substances to work; consuming intoxicants or using controlled substances on PennDOT premises; reporting for duty under the influence of intoxicants or controlled substance; or supervisory personnel allowing any of the above.
 - i. Operating PennDOT vehicles or equipment without a valid operator's license, appropriate classification or certification.
 - j. Operating deadlined equipment.

- k. Attempting to alter equipment so that it is not in compliance with the original manufacturer's build or PennDOT specifications, and attempting to operate such equipment.
- l. Committing any other act that could endanger someone's life or well-being.

3. Discipline for Safety Violations

- A. As of December 28, 2012, PennDOT uses the charge of "Safety Violation" for safety-related infractions to ensure that these are treated appropriately and uniformly. The following examples of safety related infractions are not intended to be all-encompassing.
 - (1) Minor violations of safety rules, including unsafe acts committed while operating PennDOT equipment.
 - (2) Any act which might endanger the safety or lives of others.
 - (3) Willful, deliberate or repeated violation of PennDOT safety rules, including instances where there is evidence of disregard of proper safety practices and precautions while operating PennDOT equipment.
 - (4) Failure to immediately report illness or injury occurring on the job to your supervisor.
 - (5) Refusing medical attention when supervisor deems it necessary.
 - (6) Supervisor/manager refusing to seek medical attention for an injured employee who requests medical attention.
 - (7) Using equipment for purposes other than its designed use.
 - (8) Committing or allowing minor violations of safety rules including unsafe acts and failure to use PPE.
 - (9) Failure to comply with proper work zone traffic controls.
 - (10) Failure to use seatbelts.
 - (11) Operating any equipment in which the safety features have been removed or disabled.
 - (12) Engaging in horseplay that could result in injury.
 - (13) Running on stairs or in corridors in office buildings.
- B. A Pre-Disciplinary Conference (PDC) will always be held when it is determined that a safety violation occurred. Appropriate disciplinary action will be imposed after evaluation of the investigation and PDC has occurred. Although many of the disciplinary actions issued under the charge of safety violations may be progressive in nature, all discipline will not necessarily be progressive, in that each level of discipline does not have to be imposed. The specific circumstances of each situation will be taken into consideration when determining the appropriate disciplinary action, and the manager will continue to follow all applicable contractual provisions and principles of due process and just cause.
- C. Questions related to this section should be directed to an Employee Relations and Workforce Support Analyst.

4. Safety Recognition Program

- A. Policy
 - (1) PennDOT encourages recognition for employees who perform their job duties in a safe manner, as described in this section.
 - (2) The administration of the Safety Recognition Program must be consistent with the guidelines contained in Management Directive 505.23, Employee Recognition Programs. The total award value per recipient cannot exceed the maximum allowable amount per Fiscal Year (FY) for all recognition programs, including non safety recognition programs.

- (3) Awards may be presented to permanent employees, work crews, work groups or entire organizations on a semi-annual or annual basis.
- (4) Light refreshments may be provided for safety recognition ceremonies.
- B. The following awards will be considered for organizations with field operations.
- (1) Individual Employee Award
- a. Eligible employees must be presented the individual award, if they meet the following criteria, based on fiscal year statistics from July 1, 2002 to present. (Once an employee has an OSHA recordable work-related injury or disciplinary action for a safety violation, the number of years for the above criteria is reset to zero.)
 - I. One year or more without an OSHA recordable work-related injury, and;
 - II. One year or more without disciplinary action for a safety violation.
 - b. Only permanent maintenance, construction, survey, and bridge inspection personnel who are assigned continuous field duty, are eligible for the Individual Employee Award.
 - c. The following list of classifications are eligible for this award. If bureau/district/county employees' classifications are not on the list below and they perform six months of continuous field duties such as the classifications listed below, they may be considered for the Individual Employee Award.

County Maintenance Employees		Engineering District Office Employees
Automotive Equipment Foreman	Semi-Skilled Laborer	Automotive Mechanic
Automotive Mechanic	Tradesman Helper	Bridge Inspection Crane Technician
Automotive Mechanic Supervisor	Transportation Equipment Operator A	Bridge Inspn Crane Tech Supervisor
Custodial Worker 1 and 2, if assigned duties for yard work and/or snow removal	Transportation Equipment Operator B	Custodial Worker 1, if assigned duties for yard work and/or snow removal
Carpenter	Transportation Equipment Operator Specialist	Drill Operator 1 (District 3)
Diesel and Construction Equipment Mechanic	Transportation Equipment Operator Trainee	Drill Operator 2 (District 3)
Equipment Body Repairer and Painter	Tunnel Maintainer	Electrician (District 3)
Highway Foreman 2	Tunnel Maintainer Supervisor	Electrician Foreman (District 3)
Highway Foreman 3	Wastewater Treatment Plant Operator	Highway Foreman 3
Highway Maintenance Worker	Wastewater Treatment Plant Supervisor	Maintenance Repairman 1
Highway Sign Worker	Welder	Maintenance Repairman 2
Laborer		Survey Technician
Maintenance Repairman 1		Survey Technician Supervisor
Maintenance Repairman 2		Transportation Construction Inspector
Mason		Transportation Construction Inspection Supervisor
Medium Voltage Electrician		Transportation Equipment Operator A
Medium Voltage Electrician Foreman		Transportation Equipment Operator B

- d. Maximum cost of awards during the achievement period is as follows:

	Field Employees:
1st Year	\$10.00
2nd Year	\$15.00
3rd Year	\$20.00
4th Year	\$25.00
5th through 9th Year	\$30.00
10th Year and thereafter	\$50.00

- e. Award eligibility will be verified by the Accident Tracking System (ATS) County Coordinator and/or District Safety Coordinators (DSC) with coordination from the respective County Manager and/or Assistant District Executive (ADE). The county or district Safety Committee will select a gift each year for the different award thresholds.

(2) Organization Award for Meeting Safety Goals

- a. District/county organizations that meet or exceed all of PennDOT’s organizational FY safety goals may be recognized on a yearly basis for that year’s accomplishments.
- b. Deputates/bureaus with garage or field operations (to include Driver License Examiners) and incident rates may also provide an organization award if they meet or exceed PennDOT’s organizational FY goal.
- c. Maximum cost of awards during the achievement is as follows:

Organization Met PennDOT Safety Goal for Organization	
Annually	\$10 per person in organization. Total amount should be used to purchase a unit gift which could include a plaque, pizza party, individual item, work area item, etc.

- d. Employee Safety and Training Division will provide the end of the FY results. District Executives (DEs) and/or County Manager in coordination with the district or county Safety Committee will select the type of gift for the organization.

(3) Maintenance Organization Award

- a. The purpose of this award is to encourage and reward maintenance organizations that display an exemplary commitment to safety and safety improvement. Most personal injuries and vehicular accidents occur in the maintenance environment. That is why this program will focus on PennDOT County Maintenance Organizations and the Fleet Management Division. To reward those organizations, who by their safety records have demonstrated a commitment to safety, acknowledgements of continuous improvement will be offered.
- b. The “acknowledgement” will be in the form of a piece of equipment or tooling that will serve to improve operational efficiencies and enhance safety.
- c. The highest level of acknowledgement includes a new goal that is being introduced for this award category: 1,000 consecutive days without a disabling injury.

- d. Maximum annual cost of awards during the achievement period is as follows:

Maintenance Organization Awards	
Annually	\$2,500 in tools and/or equipment for all organizations that have met their fiscal year goal related to “OSHA recordable work-related injury” or the “Fleet Accident” category and have no fatalities.
Annually	\$5,000 in tools and/or equipment for all organizations that have met their fiscal year goals in both the “OSHA recordable work-related injury” and “Fleet Accident” categories and have no fatalities.
The year in which the goal of 1,000 consecutive days without a disabling injury is reached	\$50,000 in equipment for all organizations that have met all goals, have no fatalities and have reached the 1,000 days goal.

- e. The reviews of improvement will be conducted at the end of the fiscal year, and a determination will be made as to the organizations that have qualified for the Maintenance Organization Award.
- f. This award will be administered by the Employee Safety and Training Division; however, the purchase and delivery of the award shall be the responsibility of the Fleet Management Division at the instruction of the Employee Safety and Training Division.
- g. The funds may be spent on multiple items as long as the total does not exceed the thresholds established above.
- h. County Management should acknowledge the repair facilities through the equitable distribution of these funds. The shop employees play a significant role in assisting the county in reaching these goals.

C. The following awards are optional, as appropriate:

(1) Work Crew Award

April 1 - October 31	\$10 per person on work crew. Total amount should be used to purchase a unit gift which could include a plaque, pizza party, individual item, equipment for the stockpile, etc.
November 1 - March 31	\$10 per person on work crew. Total amount should be used to purchase a unit gift which could include a plaque, pizza party, individual item, equipment for the stockpile, etc.

- a. Work crews assigned to an Assistant County Manager’s area, specialized crew, stockpile, or garage for a full summer or winter work cycle may be recognized twice a year based on the following criteria:
 - I. Entire summer and/or winter work crew goes without an OSHA recordable work-related injury during that year’s summer (April 1 - October 31) and/or winter (November 1 - March 31) seasons, and;
 - II. Entire summer and/or winter work crew go without a preventable fleet/equipment accident during that year’s summer (April 1 - October 31) and/or winter (November 1 - March 31) seasons.
- b. Award eligibility will be verified by the ATS County Coordinator and/or DSC with coordination from the respective County Manager and/or ADE. The county or district Safety Committee will select a gift each year for the different award thresholds.

(2) Safety Committee/Safety Work Group Award

- a. Safety committees or work groups who work on projects to improve the safety of employees and/or the public may be recognized each fiscal year based on the following criteria:
 - I. Establish goals and objectives which are met, and;
 - II. Project has the potential of making either a substantial reduction in injuries/accidents or contributes to creating a safety culture.
- b. Nominations will be submitted by the committee to the respective DSC and reviewed by the district Safety Committee who will recommend selection(s) to the DE and ADE for final approval.

5. Training and Communication

A. Safety Policy Handbook Training (78SAFE000003)

- (1) This classroom training includes the distribution of a copy of the Safety Policy Handbook (Pub 445) to all participants along with a presentation of its contents.
- (2) This training is included in the New Employee Orientation Program (NEOP) for all new employees and all employees attend this training when a new edition of Pub 445 is released.
- (3) Training registrations and completion records must be maintained in LSO using the above course code.

- B. Work rules and the progressive disciplinary process are communicated to all employees in various trainings, such as NEOP and Leadership Academy for Supervisors (LAS).

6. Program Review

- A. This chapter will be reviewed annually to ensure that the information is current, adequate, and effective.
- B. Details of the annual review will be documented under Recordkeeping.

7. Recordkeeping

- A. Safety Policy Handbook Training records will be maintained in LSO and accessible as evidence that safety rules and enforcement procedures have been communicated to employees.
- B. This chapter contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Content
Intro	Original, based on AIPP requirements for Element L
1	PPIM 10-028 Compliance with Safety Policies (Issued 3/11/02 and 7/2/10)
2	Pages 4-5 of Pub 445 (10-13)
3	PPIM 12-153 Discipline for Safety Violations (Issued 12/28/12)
4	PPIM 13-148 Safety Recognition Program (Issued 1/25/13, Effective 10/22/13)
5-7	Original, based on AIPP requirements for Element L

Chapter M – Accidents and Near Misses

Section	Topic	Page
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2	Accident and Near Miss Reporting, Investigation, and Review Process	82
3	Additional Procedures for Fleet and Equipment Accidents	90
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5	Cause Identification and Corrective Action	92
6	Accident and Near Miss Records Auditing Procedures	93
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This chapter covers all policies and procedures regarding the response, communication, reporting, investigation, documentation, and review processes for fleet and equipment accidents, work-related injuries, and near misses.

1. Procedures for Serious Injuries/Incidents that Require Immediate Reporting

This section establishes standard procedures for the immediate reporting and handling of serious injuries and incidents that occur in PennDOT work zones, on PennDOT worksites, or on PennDOT projects that impact the welfare of PennDOT employees.

A. Injury/Incident Notification Form (P-17)

Engineering districts must report this information through the District Safety Coordinators (DSC). This reporting is critical to ensure that necessary human resources actions are initiated, including timely notification to PennDOT leadership. To assist in the ease of reporting an injury or incident, the Employee Safety and Training Division developed and maintains the P-17. This form is designed to attach to a formatted email after completion, and is accessible in the following folder: <https://spportal.dot.pa.gov/highway/safety/Safety%20Policy/PUB%20445M%20Forms>.

- (1) Upon receipt of notification of an injury or incident, districts must immediately report all known details via telephone or email to the Employee Safety and Training Division.
- (2) The District Safety Coordinator must then submit the Injury/Incident Notification Form to the Employee Safety and Training Division no later than two hours from the time of the incident.

B. The following are examples of injuries and incidents that must be reported immediately.

This is not an all-inclusive list of what must be reported. If a district representative is uncertain whether an injury or incident falls within these guidelines, they should contact the Employee Safety and Training Division immediately for guidance.

- (1) A catastrophic work-related injury or injuries.
- (2) A non work-related death or deaths on the work premises.
- (3) An incident where PennDOT is involved in a catastrophic injury or injuries to the public.
- (4) An accident resulting in injury to two or more employees.
- (5) Any incident for which attention by the press is anticipated.
- (6) Any incident involving a work zone intrusion.

C. Guidance to Field HR Business Partners for a Catastrophic, Life Altering Injury or Fatality

In the event of a fatality or life altering catastrophic injury, there are additional considerations for Field HR Business Partners. The following considerations are identified to prepare Field HR Business Partners for what to expect, and how to coordinate work-related accident activities in response to a work-related fatality or catastrophic, life altering injury.

IMMEDIATE ACTIONS

- (1) Attend to Emergency Response Needs
Responsible parties: Local crew or work unit
- (2) Contact Emergency Contacts
Responsible parties: Human Resource Delivery Center Manager, Local Management, and Law Enforcement
 - a. In the event of unconsciousness, utilize the emergency contact designation sheet in the employee's personnel file or via SAP to contact emergency contact(s).
 - b. In the event of a very serious accident which may result in fatality, it is advisable to make notification to the designated emergency contact, in person, with local law enforcement. (Next row explains what information can be released.)
 - c. In the event of fatality, law enforcement will assist PennDOT in notifying the designated contact(s). Discuss with law enforcement whether local counseling services are offered so this can be made available at the time of notification. Also discuss whether the emergency contact has any known serious health conditions which may be adversely affected by learning of the fatality. (Next row explains what information can be released.)
 - d. It may be advisable to offer the SEAP counseling toll free phone number 1-800-692-7459 (card), and also through the local officials, provide information on local counseling services (as some local municipalities do offer this when there is a fatality), explain that they should expect additional contact and correspondence regarding commonwealth benefits.
 - e. Information that Can be Released to the Emergency Contact
 - I. It is important not to speculate on the cause of accident or to give too much information that cannot be comprehended at the time of notification. This information must be relayed with sincere condolences along with a card with the contact information of the PennDOT official and the law enforcement officer in charge of the investigation (if known).
 - II. The following is some suggested language that can be used when notifying the emergency contact or next of kin. "There was an accident at work, and ____ was seriously injured, in an (equipment/vehicle accident or when struck by a public motorist). We do not know all of the details as there are accident investigations underway and law enforcement is in the process of interviewing all witnesses."
- (3) Offer Affected Employees SEAP
Responsible parties: Local Supervisor/Manager
 - a. Immediately offer the SEAP resource number.
 - b. SEAP counselors are available 24/7 by phone at 1-800-692-7459.
- (4) Complete Injury/Incident Notification to Central Office
Responsible parties: District Safety Coordinator (DSC) or County Manager
 - a. An immediate notification must be called in to the Employee Safety and Training Division. Detailed written follow-up in the form of the Injury/Incident Notification Form must be completed as soon as possible. Communicate updates as conditions change.
 - b. Note: Work-related Injury Services will notify the third party administrator and determine if a field nurse is needed.
- (5) Contain Information to Those Who Need to Know
Responsible parties: Local Management and Crew
 - a. Do not release information outside the investigation team or chain of command.
 - b. Address confidentiality. As a matter of respect and safety, crew members must contain information to allow for proper notification to the emergency contact or next of kin. There must be no text messaging, no phone calls, and no verbal discussion outside the crew during this time.

- (6) DSC travels to site
Responsible parties: DSC
After necessary notifications have been made, the DSC must travel to the accident scene to assist with the accident investigation.
- (7) Manage Internal Communications
Responsible parties: Field HR Business Partner to/from Employee Safety and Training Division.
- a. Designate a single point of contact for all communications to/from the Employee Safety and Training Division.
 - b. Plan ahead on how to report information when there is a lack of cellular phone coverage in the region.

ACTIONS TO BE COMPLETED WITHIN 1 HOUR

- (8) Begin Accident Investigation
Responsible parties: Local Management and DSC
Coordinate internal accident investigation activities with law enforcement's investigation, so as not to interfere.
- (9) Go to the Hospital
Responsible parties: County Manager
- a. The manager should travel to the hospital to greet family, communicate information to the hospital staff, and collect information on the employee's status.
 - b. Provide PennDOT contact information to the family (county manager cell phone, office phone, etc.) Can offer SEAP resource number as well: 1-800-692-7459.
- (10) Request State Employee Assistance Program (SEAP) Services
Responsible parties: SEAP Coordinator/Alternate to Central Office SEAP, Local Management
If on-site counseling is needed, a Critical Incident Stress Debriefing (CISD) can be requested.

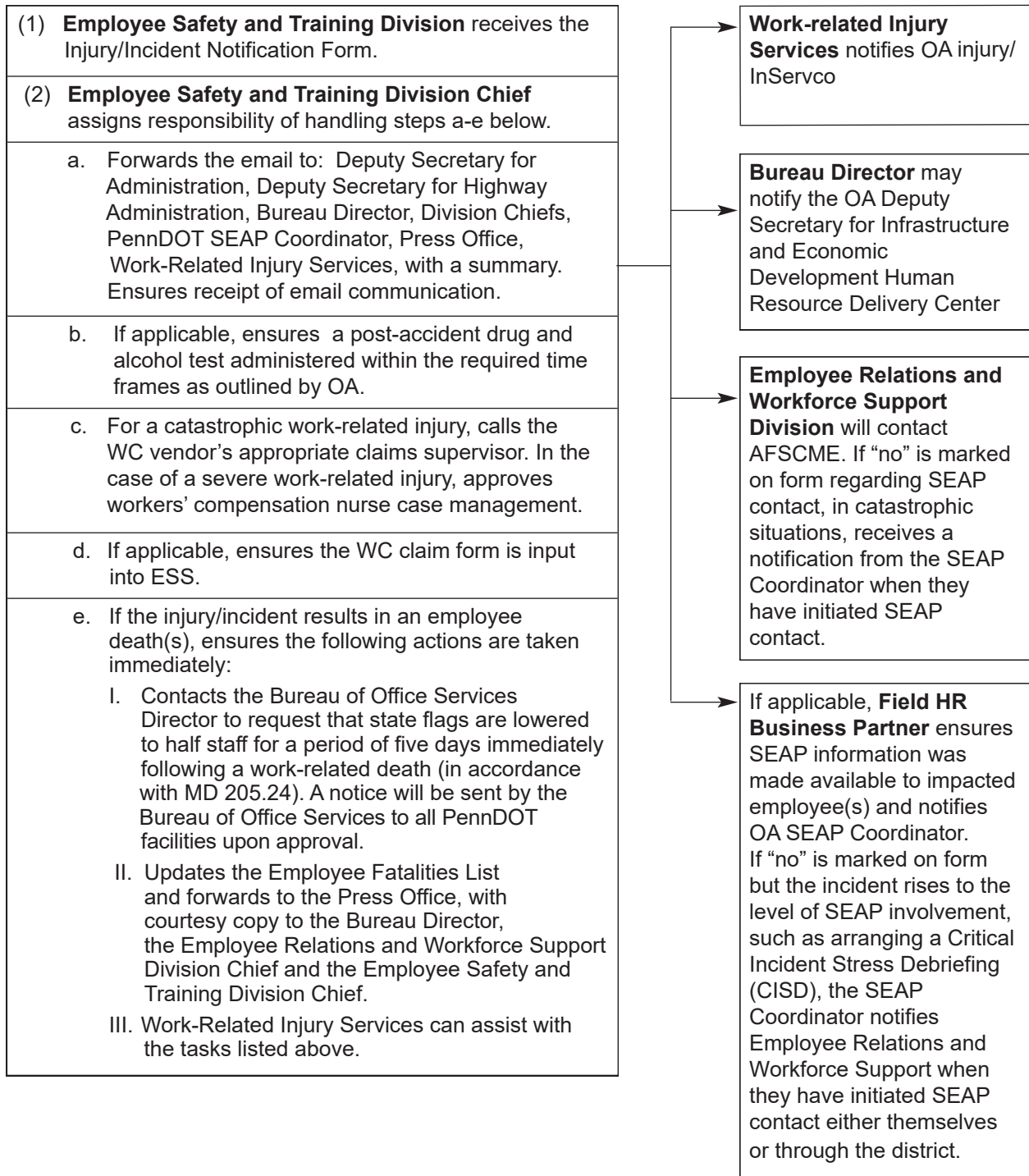
ACTIONS TO BE COMPLETED WITHIN 24 HOURS

- (11) Consider Management Visit to Hospital
Responsible parties: Executive Management
Management may make a case by case determination to visit a hospitalized employee.
- (12) Accommodations For Family
Responsible parties: Executive Management (Case by Case Determination)
Arrangements for family members of the employee when the treating hospital/medical facility is not readily accessible must be requested by the District Executive to the Deputy Secretary for Administration.
- (13) Accident Investigation to be Completed
Responsible party: DSC
Submit all documentation to the Employee Safety and Training Division, which will in turn share with Executive Management.

ACTIONS WITH ONGOING FOLLOW-UP

- (14) Accident Investigation
Responsible parties: District Executive Management, Local Management, DSC, and possibly Employee Safety and Training Division.
- a. Collect all law enforcement investigation reports as part of the internal PennDOT review. (This can take several weeks.)
 - b. Consider an After Action Review, and report findings into the Employee Safety Division.
- (15) Workers' Compensation
Responsible parties: Work-related Injury Services
- a. If a field nurse was assigned to manage medical care, monitor for ongoing status updates.
 - b. Relay medical reports to Executive Management, as necessary.
 - c. Communicate necessary follow-up information to workers' compensation, as requested.
- (16) Accommodation for the Family of a Catastrophically Injured Employee
PennDOT intends to demonstrate the utmost concern and care for the families of our employees under these circumstances. The following guidelines shall be adhered to when making accommodations available to family members.
- a. Hotel accommodations may only be made for the employee's immediate family members, defined as the spouse, child, or parents.
 - b. Hotel accommodations are appropriate only if the immediate family members reside more than 50 miles from the location of the treating hospital or medical center.
 - c. Only one room may be paid for with PennDOT funds for each PennDOT employee who sustained a catastrophic injury.
 - d. Accommodations can be made up to three days.
 - e. Requests for exemptions to the above guidelines may be submitted to the Director, Infrastructure and Economic Development Delivery Center and, under extenuating circumstances, may be approved by the Deputy Secretary for Administration or their designee.
 - f. The preferred method of payment is the use of the agency lodging card requested through PD, Travel. An alternate option is for the District Executive or the Field HR Business Partner to charge the expense to their travel corporate card until the agency lodging card can be secured through PD, Travel.
 - g. For all costs incurred, PennDOT will first seek financial reimbursement from the PennDOT Employee Association (PEA). Accommodations provided to the employee's immediate family members that are not covered through PEA contribution will be considered gross/taxable wages to the employee. In the event that accommodation will not be covered through PEA contribution, the employee or employee's immediate family members shall be given opportunity to refuse accommodations.

D. The Infrastructure and Economic Development Human Resource Delivery Center (IEDHRDC) internal procedures for handling the reporting of this information are illustrated below:



2. Accident and Near Miss Reporting, Investigation, and Review Process

This section establishes processes and procedures to identify hazards and controls through accident investigation.

A. Policy

All accidents and near misses shall be reported and investigated, and appropriate corrective actions shall be implemented in a timely manner as described in this policy.

B. Purpose

There is one uniform process for responding to, documenting, investigating, and reviewing all accidents and near misses. This process is designed to effectively gather and objectively review all of the facts available in relation to an accident or near miss; to identify the conditions, actions, or inactions that contributed to its occurrence; and to determine how these contributing factors can be eliminated, controlled, or protected against to prevent an accident or near miss from reoccurring. This process also retains accident and near miss data for future reference and analysis.

C. Objective

This process will result in the reduction of personal injuries and vehicle accidents by obtaining all of the knowledge that can be gained through the thorough investigation of each accident and near miss, and implementing preventative measures and corrective actions to minimize the risk of a repeat occurrence.

D. Scope

This policy applies to all PennDOT employees, both permanent and temporary.

E. Definitions

- (1) **Accident:** Includes fleet accidents, equipment accidents, and work-related injuries.
- (2) **Cause:** The terms cause and contributing factor may be used interchangeably to identify a hazard that directly or indirectly contributed to the occurrence of or caused an accident or near miss.
- (3) **Damage:** The breaking, creasing, cracking, tearing, denting, separation, weakening or disabling of any part of a piece of property.
- (4) **Fleet Accident:** An occurrence of one or more of the following:
 - a. Damage, no matter how minor, to a department vehicle that tracks mileage.
 - b. Damage, no matter how minor, to private property involving contact with a department vehicle that tracks mileage, or any object physically attached to that vehicle.
 - c. Injury to a human being, involving a department vehicle that tracks mileage or any object physically attached to that vehicle.
- (5) **Equipment Accident:** An occurrence of one or more of the following:
 - a. Damage, no matter how minor, to a department vehicle that tracks hours.
 - b. Damage, no matter how minor, to private property involving contact with a department vehicle that tracks hours or any object physically attached to that vehicle.
 - c. Injury to a human being, involving a department vehicle that tracks hours or any object physically attached to that vehicle.
- (6) **Near Miss:** An event that was observed to have had the potential to be categorized as an accident but did not result in property damage, an injury or illness requiring professional medical attention, or a fatality. This may include, but is certainly not limited to, work zone intrusions that do not result in an accident.
- (7) **Property:** Anything that is owned by a person or entity including motor vehicles, equipment, facilities, land, structures, etc.
- (8) **Work-Related Injury:** An employee requiring professional medical attention, or an employee fatality, due to an injury or illness arising while in, and related to, the course and scope of his or her employment with PennDOT.

F. Publications and Forms

The following publications were developed and are maintained by the Employee Safety and Training Division to facilitate the execution of the Accident and Near Miss Reporting, Investigation, and Review Process. Unless otherwise indicated below, the documents/forms in these publications were developed and are maintained by the Employee Safety and Training Division.

(1) Work-Related Injury Grab and Go (Pub 805)

- a. Supervisor Checklist for Work-Related Injuries and Illnesses
- b. Guide to Assess a Work-Related Injury
- c. Accident Investigation Report (P-25)
- d. Commonwealth Employee Witness Statement
A standard form is used by all commonwealth agencies for employees to provide a written statement describing their firsthand knowledge, observations, and experiences pertaining to any event that is being investigated.
- e. Criteria for Taking Photographs for Accident Reporting

Links to the following forms are provided in the updated Pub 805:

- Panel Doctors List by County
- Return to Work Status Report
- CDL Employee Prescription Medications Form 708
- Key Scripts Benefit Management Instructions for Workers' Compensation Prescription Benefit Claims
- Notification to Employees of their Rights and Duties
- Notice to Employees - Work-Related Injury Information
- Workers' Compensation Claim Form JPA-797

(2) Fleet and Equipment Accident Grab and Go (Pub 806)

- a. Supervisor Checklist for Fleet/Equipment Accidents
- b. Automobile Accident or Loss Notice (STD-541)
This form is provided by the Department of General Services, Bureau of Risk and Insurance Management, for use by all agencies using commonwealth owned vehicles.
- c. Accident Investigation Report (P-25)
- d. Commonwealth Employee Witness Statement
- e. Criteria for Taking Photographs for Accident Reporting

(3) Investigation Guide for Accidents & Near Misses (Pub 807)

- a. Completing Witness Statements
- b. Conducting the Investigation
- c. Criteria for Taking Photographs
- d. Guide to Cause Identification and Corrective Action
- e. Driver Errors and Related Safe Driving Practices

G. Responsibilities

For universal application at PennDOT participation is described by identifying the chain of command as employee, supervisor, manager, and executive/director. An effective investigation of accidents and near misses, requires cooperative participation throughout the organization as follows:

(1) Employees

- a. Report all accidents and near misses to their supervisor immediately after they become aware of their occurrence.
- b. Complete forms as required.
- c. Assist in the investigation of all accidents and near misses by providing any and all information they have regarding an accident or a near miss.
- d. Provide written witness statements upon request.

(2) Supervisors

- a. Maintain a copy of Pub 805, Pub 806, and Pub 807, and the current list of panel physicians at the worksite, so that these are readily accessible at all times.
- b. Respond to an accident or near miss immediately upon notification or awareness of the occurrence.
- c. Promptly notify their chain of command of the occurrence of an accident or near miss.
- d. Thoroughly investigate and document the accident or near miss using the appropriate publications/forms.
- e. Ensure employees understand their responsibilities as described in this chapter.

(3) Managers

- a. Arrange for employee(s) involved to be sent for post-accident drug and alcohol testing within two hours, as required (refer to criteria in Protocol 13).
- b. Implement the procedures for serious injuries/incidents that require immediate reporting immediately, as required (refer to section 1 of this chapter)
- c. Ensure the Equipment Manager is promptly notified of all fleet and equipment accidents.
- d. Ensure the DSC is notified of all accidents or near misses within 24 hours.
- e. Ensure a preliminary and finalized report is entered into the Accident Tracking System (ATS) within the required time frames.
- f. Facilitate the completion of the investigation within five business days by meeting with another manager and the investigating supervisor. Reference pages 4-9 of Pub 807 and complete page 2 of the P-25.
- g. Ensure all corrective actions are assigned and implemented within a reasonable period of time.
- h. Ensure the appropriate documentation of an investigation is provided to the appropriate parties as required and a hard copy of all documents is maintained on file at the local office.
- i. Ensure supervisors and employees understand their responsibilities as described in this policy.

(4) Equipment Managers

Ensure all accident reporting procedures are completed as directed in Chapter 5 of Pub 177 – Equipment Maintenance and Management Policies Manual.

(5) Local Safety Committees

At regularly scheduled meetings, review page 1 of the P-25 (or similar documentation) for all accidents and near misses that have happened within its local organization since their previous meeting. The committee will submit any concerns or recommendations they may have for corrective action to local management.

(6) Safety Coordinators

- a. Ensure the Injury/Incident Notification procedures are followed upon implementation by managers.
- b. Participate in investigations upon request and when possible.
- c. Review report and investigation documents and follow up with managers as needed to ensure causes and contributing factors were identified and appropriate corrective actions were assigned and implemented.
- d. Participate on the accident review panel.
- e. Ensure all reports are finalized in ATS and all information entered is accurate and consistent with the report and investigation documentation.

- f. Save all reporting and investigation documents electronically in accordance with Section 6.B of this Chapter.
 - I. The following documents are required to be kept as part of the safety records and shall be included in the safety records management folder (electronic/hard copy):
 - (a) Accident Investigation Report (P-25)
 - (b) Witness Statements
 - (c) Photographs, if applicable
 - (d) Police report, if applicable (submit upon receipt)
 - II. The following documents are required to be given to the employee as part of the initial incident packet. Safety **does not** retain these forms as part of their safety records management folder (electronic/hard copy) but are to be sent to OA Injury/Workers Compensation:
 - (a) Workers' Compensation Claim Form
 - (b) Rights and Duties form signed by the injured employee
 - (c) Return to Work Status report for initial treatment
 - (d) Return to Work Status reports for follow-up treatment (submit upon receipt)
 - g. Conduct training to ensure supervisors and managers are knowledgeable of investigation procedures and techniques.
 - h. Serve as the contact and resource person for accident and near miss reporting and investigation procedures.
- (7) District Executive/Bureau Director
- a. Designate an Accident Review Panel for each district/bureau. This panel shall consist of approximately two management level employees (e.g. Assistant District Executive for Maintenance and District Equipment Manager) and the DSC. Panel members must remain as consistent as possible, so that accident reviews are conducted uniformly.
 - b. Ensure that this panel effectively performs its responsibilities.
- (8) Accident Review Panel
- a. Review the file and initial the P-25 for each accident and near miss.
 - b. Follow up with the appropriate manager as needed to ensure causes and contributing factors were identified and appropriate corrective actions were assigned and implemented.
 - c. Establish a process for monitoring follow through on corrective actions.
- (9) Employee Safety and Training Division
- a. Perform all Safety Coordinator responsibilities for accidents involving employees that are not in the engineering districts.
 - b. Perform routine audits of reporting/investigation documents and ATS entries to ensure accuracy and consistency of information.
 - c. P-17 Notifications – Email Distribution List
- Goal: An official electronic distribution list is needed to promptly notify the proper persons whenever a PennDOT employee suffers a catastrophic (serious or life threatening) injury at work. This is also necessary whenever a vehicle or equipment accident occurs within a PennDOT work zone (with/without a serious injury) in which press coverage is anticipated.
- The list below is intended to include upper management level positions such as Deputy Secretaries, Agency Heads, and District Executives. Field HR Business Partners, ADEs for Maintenance, Safety and Press Office Professionals, and SEAP Coordinators are included from PennDOT as well as OA's top management.

POSITION	UNIT, BUREAU, OR DISTRICT	AGENCY	CURRENT EMPLOYEE
Secretary of Transportation	Executive Office	PennDOT	Mike Carroll
Deputy Secretary for Admin.	Executive Office	PennDOT	Corey Pellington
Executive Deputy Secretary	Executive Office	PennDOT	Cheryl Moon-Sirianni
Deputy Sec. for Highway Admin.	Executive Office	PennDOT	Michael W. Rebert (acting)
Deputy Secretary for Planning	Executive Office	PennDOT	Larry Shifflet
Deputy Secretary for DVS	Executive Office	PennDOT	Kara Templeton
Deputy Secretary for Multimodal	Executive Office	PennDOT	Andrew Batson (acting)
Communications Director	Press Office	PennDOT	Erin Water-Trasatt
Sr HR Business Partner	HR & Management	OA	Monica Mika
Safety Specialist Manager	Highway Administration	PennDOT	Vacant
Division Chief	Employee Relations	OA	Steven Koscelnak
Division Chief EE Safety & Training	Highway Administration	PennDOT	Daryl St. Clair
Commonwealth SEAP Coordinator	Bureau of Workforce Support	OA	Susan Moravetz
Deputy Secretary of HR & Mgmt.	Human Resources & Mgmt.	OA	John Gasdaska (acting)
Secretary of Administration	Administration	OA	Michael Newsome
Chief Executive	Highway Administration	PennDOT	Jonathon Fleming
Bridge Office Director	Highway Administration	PennDOT	Richard Runyen
Major Bridge P3 Director	Highway Administration	PennDOT	Christine Norris (acting)
Bureau of Design and Delivery Director	Highway Administration	PennDOT	Christine Spangler
Bureau of Const. and Mat. Director	Highway Administration	PennDOT	Joseph Robinson (acting)
Bureau of Operations Director	Highway Administration	PennDOT	Dan Farley
Bureau of Maintenance Director	Highway Administration	PennDOT	Christa Newmaster
Division Chief	Highway Safety/Traffic Oper.	PennDOT	Douglas Tomlinson
Section Chief for Emer. Incident Mgmt.	Highway Administration	PennDOT	Daniel Whetzel
Special Advisor	Strategic Transportation Initiatives	PennDOT	T Jay Cunningham (acting)
District Executives*	All Engineering Districts	PennDOT	See email group below
ADEs for Maintenance*	All	PennDOT	See email group below
County Maintenance Manager	Affected County	PennDOT	Affected County
Work-Related Injury Specialist	HR Service Center	OA	Danielle Orris
District Safety Coordinators*	All Engineering Districts	PennDOT	See email group below
Safety Division Staff*	EE Safety & Training Division	PennDOT	See email group below
Area Commanders & Staff*	Traffic Command	PennDOT	See email group below

* Notes: District Executives use PD-District Executives email group.
District Safety Coordinators use PD-Safety Coordinators email group.
ADEs for Maintenance use PD-ADEs for Maintenance email group.
Safety Division Staff use PD-Employee Safety Division, BHR email group.
Traffic Command Center use PD-PennDOT TCC email group.

(10) Fleet Management Division

Perform all equipment manager responsibilities for accidents involving employees that are not in the engineering districts.

H. Procedures

- (1) When employees are involved in an accident/near miss or when employees become aware of the occurrence of an accident/near miss involving a coworker, they must report the occurrence to their supervisor immediately.
- (2) Upon notification or awareness of the accident/near miss, the supervisor will provide or direct immediate response, promptly notify the manager, and begin documenting and investigating the accident/near miss as referenced in Pub 807 and proceed as follows:
 - a. For work-related injuries use Pub 805.
 - b. For fleet and equipment accidents use Pub 806.

- c. For near misses involving an injury that did not require professional medical attention, use Pub 805, but only complete the Workers' Compensation Claim Form, P-25, and witness statement(s). (Be sure to select "Incident Only" under Type of Claim on the Workers' Compensation Claim Form.)
 - d. For all other near misses, only the P-73 and witness statement(s) are required.
 - e. If any of the above (a-d) occur simultaneously, follow the instructions for all that apply.
- (3) Upon notification by the supervisor, the manager:
- a. Initiates procedures for serious injuries/incidents that require immediate reporting, when applicable. (Refer to Section 1 of this chapter.)
 - b. Arranges for post-accident drug and alcohol testing within 2 hours, as required. (Refer to Protocol 13.)
 - c. Ensures that the DSC is notified of the accident/near miss by the next business day if step 3a does not apply. Notice may be communicated by telephone or by email.
 - d. Notifies the equipment manager of all fleet and equipment accidents.
 - e. Oversees the reporting and investigation process to ensure accurate and complete information is documented as required and documents are forwarded to the appropriate parties within the required time frames described in the Pub 805 and Pub 806, and in this chapter.
 - f. Ensures all information is entered into ATS as described in this chapter.
 - g. Ensures all completed Workers' Compensation Claim Forms are submitted electronically via Employee Self-Service (ESS). For near misses, ensure that "Incident Only" is selected under Type of Claim in ESS.
- (4) Within five work days of the date of an accident, the manager concludes the investigation by meeting with another manager and the investigating supervisor.
- a. During this meeting, all of the information gathered during the investigation shall be reviewed, including all witness statements and photographs, to ensure accuracy, consistency and completeness. If further information and clarification is needed, arrangements must be made to obtain that as soon as possible.
 - b. Referencing pages 4-9 of Pub 807, managers must document the direct causes, contributing factors, and corrective actions to minimize the risk of the reoccurrence of the accident/near miss on page 2 of the P-25.
 - c. When feasible, the participation of the DSC in this meeting is recommended, either in person or by phone.
 - d. At the conclusion of the investigation, if there is evidence of any safety violation(s), that must be documented by checking the box at the bottom of page 2 of the P-25.
- (5) After signing the completed P-25, managers must:
- a. Assign the corrective actions to the appropriate person(s) and ensure that they are implemented within a reasonable period of time.
 - I. Ensure that the preliminary record in ATS is finalized, as described in Section 6 of this chapter.
 - b. Promptly forward a copy of the entire accident/near miss file electronically to the DSC and maintain a hardcopy at the local office.
 - c. Submit a copy of page 1 of the P-25 (or similar documentation) to the local safety committee for review at their next regularly scheduled meeting.
 - d. Address evidence of safety violations by promptly contacting their Employee Relations and Workforce Support Coordinator to discuss the appropriate course of action.

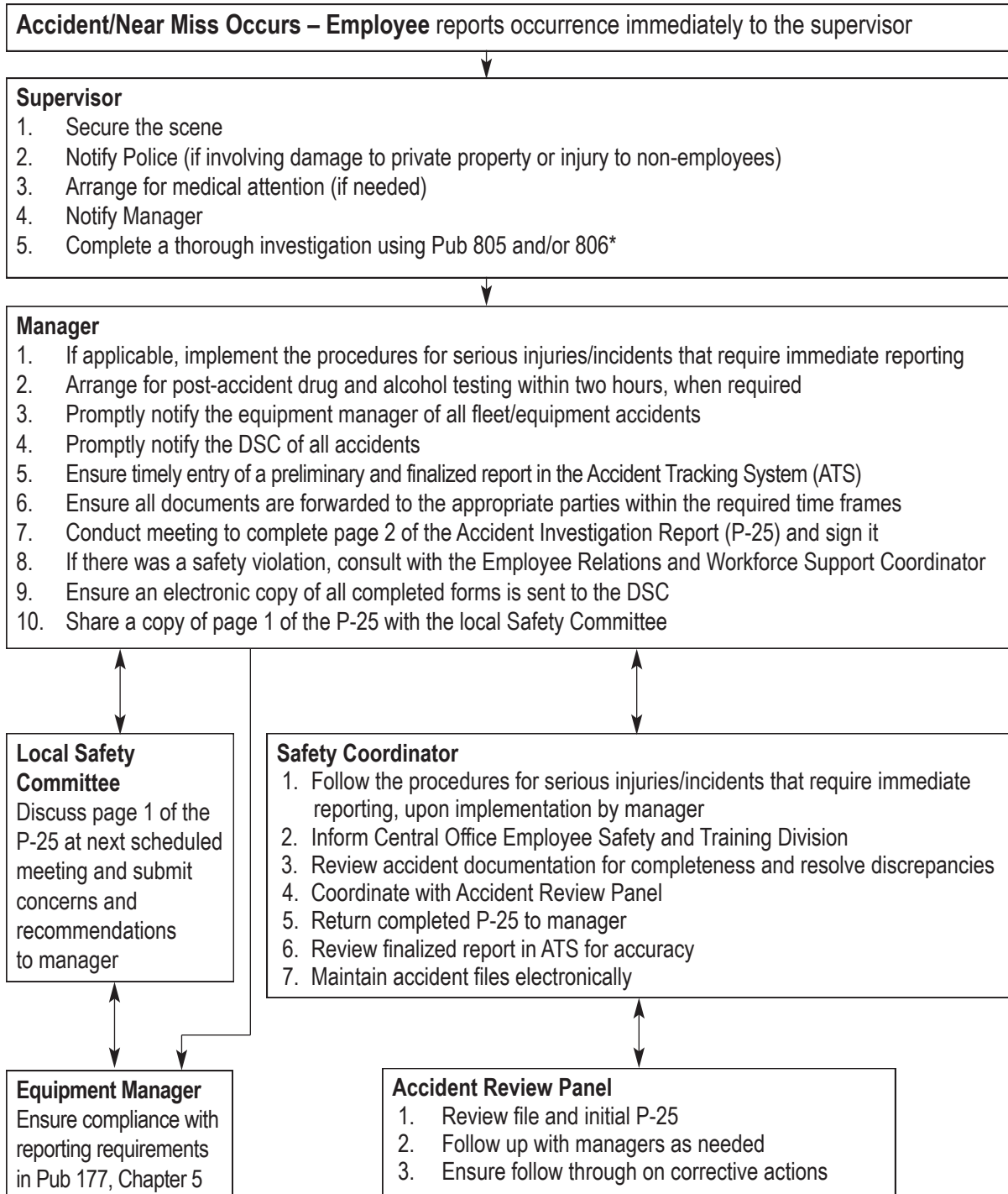
- (6) Upon receipt of the electronic copy of the accident/near miss file, the DSC must:
 - a. Save all documents electronically in a folder in accordance with Section 6.B of this chapter.
 - b. Review the information for accuracy and completeness.
 - c. Identify, investigate and resolve any discrepancies.
 - d. Coordinate with the Accident Review Panel to complete the following:
 - I. Review each accident file.
 - II. Print and have each panel member initial each P-25 to indicate concurrence that the report is complete and accurate, and that the cause(s) and corrective action(s) are appropriate.
 - III. Communicate to the appropriate manager any additional causes or recommendations for corrective actions identified during review.
 - IV. Document on the P-25 additional information or changes after discussing them with the appropriate manager and initial these additions/changes.
 - e. Save a scanned copy of the P-25 with the electronic file and forward the hard copy to the local office to be filed with the hard copy of the accident file.
 - f. Complete the audit procedures in Section 6.B of this chapter.
- (7) At their regularly scheduled meetings, local safety committees must:
 - a. Review page 1 of the P-25 (or similar documentation) for each accident and near miss that occurred since their last meeting and provide a response to managers with any recommendations or concerns they have.
 - b. Document in the written minutes of their meeting the date and type of each accident and near miss they review. General safety recommendations that result from their accident review discussions may be communicated in the minutes, but personally identifying information regarding the employees involved and the other details of their discussions must be excluded.
- I. Tick Bites, Poison Ivy, Bee Stings and Sunburn
 - (1) These types of accidents must be thoroughly investigated and all reasonable preventative measures must be identified and implemented, which include advising employees to be alert to the presence of these hazards, to wear appropriate clothing to minimize skin exposure, and providing employees with insect repellent, poison ivy prevention/post-exposure ointments and sunscreen.
 - (2) For these types of accidents, the manager may complete page 2 of the P-25 without meeting with the investigating supervisor (modification of step 4 of the procedures), if both of the following circumstances are confirmed during the investigation:
 - a. The prevention resources and reasonable precautions had been provided, brought to the attention of the employee(s) involved, and utilized when the accident occurred.
 - b. There was no safety violation in connection with the accident.
 - (3) If there are types of accidents other than those described in this section that seem to fit the criteria for modifying step 4 of the procedures, managers may contact the DSC to request permission to do so. These requests must ultimately be approved by the Employee Safety and Training Division.
- J. Accident Tracking System (ATS)
 - (1) All accidents and near miss information must be input into the ATS, as described in Section 6 of this chapter.
 - (2) A preliminary report must be submitted in ATS within 24 hours of the accident and finalized in ATS within seven business days of the accident.

- (3) The DSC must review all finalized reports in ATS to ensure the information is accurate and consistent with the facts documented in the accident file.

K. Training Requirements

- (1) All Employee Safety and Training Division staff and DSCs must attend comprehensive training on accident and near miss investigation.
- (2) Managers and supervisors must attend initial training regarding this policy and receive instruction on accident and near miss investigation methods. Refresher training shall be provided to managers and supervisors as needed. The resources for this training will be provided by the Employee Safety and Training Division staff or DSCs.

L. Accident/Near Miss Reporting, Investigation, and Review Process Map



3. Additional Procedures for Fleet and Equipment Accidents

- A. After any collision, however minor, involving PennDOT equipment or a motor vehicle (either on or off the highway), the employee(s) involved must report that collision to the supervisor immediately. The employee(s) or an on-site supervisor should secure the scene to prevent further injury or collision. Call 911 if emergency response is necessary. Work-related injury procedures apply if an employee is injured as a result of a fleet or equipment accident.
- B. The employee or supervisor must notify state or local police and request an investigation of the collision, unless all of the following conditions are met:
 - (1) A collision involves PennDOT equipment only;
 - (2) Involves no personal injury or fatality;
 - (3) PennDOT equipment damages are less than \$2,000; and
 - (4) The vehicle does not have to be towed.
- C. A collision involving PennDOT equipment or motor vehicles which results in a fatality, serious personal injury, and/or property damage over \$20,000 must be the subject of an immediate investigation. The operator must be immediately suspended from operating PennDOT equipment/motor vehicles until the collision is investigated and the District Executive/Bureau Director approves reinstatement of operator privileges.
- D. Supervisors must promptly notify management of the accident. The supervisor or manager must coordinate post-accident testing as described in the CDL Drug and Alcohol Testing section, if required.
- E. Supervisors must document the accident and complete a thorough on-site investigation using Pub 806 and Pub 807. All forms must be completed and submitted to the DSC within 24 hours.
- F. The local equipment manager or the Fleet Management Division must also be notified to ensure all accident reporting procedures are completed as directed in Chapter 5 of Pub 177 Equipment Maintenance and Management Policies Manual.

4. Work-related Injury Procedures

- A. Employees must report injuries to their supervisors immediately.
- B. The following must be done immediately:
 - (1) Call 911 (if emergency medical care is necessary)
 - (2) Secure the area to prevent further injury.
 - (3) Notify police (if involving damage to private property or injury to nonemployees).
 - (4) For nonemergency medical care, accompany or appoint an employee to accompany the injured employee to the panel physician.
- C. Supervisors must:
 - (1) Notify management.
 - (2) Document the injury/accident and complete a thorough onsite investigation using Pub 805 and Pub 807.
- D. The most important step in the injury management process is to provide immediate medical care. The type of medical care required is determined by the severity and type of injury.
- E. Supervisors use the following guidelines to determine the type of medical care required. If there is any doubt concerning the need for professional medical care, then it should be provided as a precautionary measure. If an employee requests medical treatment, it is the supervisor's responsibility to see that the employee receives it. If the supervisor determines that professional medical treatment is necessary, the injured employee must comply.
 - (1) Injuries that Require Immediate Professional Medical Treatment:
 - a. Amputations
 - b. Bone fractures

- c. Burns: First degree thermal burns (resembling sunburn) on more than 9% of body area, second degree burns with blister formations on damaged skin, third degree burns with skin destruction (flesh charred brown or white), chemical burns (potential damage of skin, eyes and/or lungs from acid and alkali exposures), and electrical burns (skin and tissue damage as in first, second and third degree burns from electrical voltage)
 - d. Head injuries
 - e. Foreign bodies (if embedded in eye or a wound)
 - f. Injuries from temperature extremes (heat illness/frostbite)
 - g. Injuries that prevent normal use of body functions (breathing, hearing, sight, sense of smell, use of arms and legs, circulation of blood, consciousness, etc.)
 - h. Injuries to employees with medical conditions that could increase the severity of the injury or complicate the healing process (diabetes, severe allergies, heart disease, lung disease, hemophilia, prescription medication, etc.)
 - i. Insect bites and contact with poisonous plants if condition interferes with the performance of duties or normal use of body functions.
 - j. Lacerations (if they require sutures, butterfly or steri-strips, or involve the removal of torn flesh)
 - k. Musculoskeletal (based on case and severity sprains, strains, inflammations, irritations, and dislocations of muscles, tendons, ligaments, nerves, joints and bones)
 - l. Poisoning or disease (from chemicals and animal bites)
 - m. Puncture wounds (includes animal bites)
 - n. Radiation (sunburn over 9% of body and all welding flash eye burns)
 - o. Respiratory disorders (from fumes, dust, chemicals, heat)
 - p. Severe abrasions and contusions (large area, deep wounds, loss of blood external and internal)
 - q. Skin disorders (from chemicals and organisms)
- (2) Injuries that can be Treated by Individuals with Knowledge of First Aid Procedures (These Injuries must be Monitored until Healed):
- a. First degree burns on less than 9% of body area
 - b. Foreign bodies (not embedded in eye or wound)
 - c. Insect bites and contact with poisonous plants if no interference with the performance of duties or use of normal body functions
 - d. Minor abrasions and contusions (small area, shallow wound, small blood loss external or internal)
 - e. Surface/shallow lacerations that do not require skin support to heal (e.g. butterfly bandages, stitches)
- (3) If Employee Is Treated at the Work Site (First Aid): If professional medical attention was not needed for the employee, the procedures for documenting near misses apply. The Accident Investigation Report (P-25) and witness statement forms must be completed. A Workers' Compensation Claim Form may be used to document the injury and shall be sent to OA Injury/Workers Compensation. If at any time the employee seeks professional medical attention for this injury, all procedures apply for documenting an accident.
- (4) If Employee Requires Professional Medical Treatment:
- a. For a medical emergency, call appropriate emergency response number.
 - b. When emergency medical care is not necessary, the supervisor must give the injured employee an opportunity to choose from the designated panel physician list. The

supervisor or designee will then contact such panel physician to obtain medical treatment. Reasonable efforts must be taken to ensure panel treatment is utilized, such as contacting at least three panel providers for availability. If a panel physician is not available, take the employee to the nearest medical facility. Follow-up treatment must be with a panel physician.

- c. The supervisor or designee must accompany the injured employee to the medical facility. The supervisor (or appointee) must remain with the injured employee until the following three conditions have been met:
 - I. The employee has been placed in the care of a medical professional.
 - II. The medical provider has received a copy of the Return to Work Status Report form or equivalent form. Employee cannot return to work until a completed form is submitted.
 - III. Information on PennDOT's transitional duty program for work-related injuries has been provided.
 - d. If it is deemed necessary to notify the injured employee's emergency contact, consult with management for proper procedures.
 - e. The supervisor should provide transportation home for an employee who has a work-related injury or illness if the employee has no other transportation.
 - f. The supervisor must follow-up with the employee weekly until the employee returns to work.
 - g. The supervisor must have all appropriate forms completed and submitted to the DSC within 24 hours of the injury.
- (5) Required Timelines
Notification to the Third Party Administrator must occur:
- a. Immediately for a fatality.
 - b. Within two work days for a claim with an anticipated absence of eight or more days.
 - c. Within five work days for a medical only claim.

5. Cause Identification and Corrective Action

At the conclusion of the investigation, management reviews all of the information, identifies causes, and implements corrective actions to minimize the risk of repeat occurrences.

- A. These two questions must be answered:
 - (1) What caused the injury/collision?
 - (2) What can be done to prevent it from happening again?
- B. Causes are divided into four categories.
 - (1) Equipment – Causes related to equipment, tools, and material.
 - (2) Conditions – Causes related to work site configuration, conditions, weather, ambient noise/activity, and traffic control.
 - (3) Preparation – Causes related to detection, control, and correction of hazards in job planning and employee training.
 - (4) Procedures – Causes related to job procedures and personal protective equipment (PPE).
- C. The following hierarchy of controls shall be used as a means of determining how to implement feasible and effective corrective actions to address causes. These are listed below in the order of effectiveness, from most effective to least effective, along with some examples of each.
 - (1) Elimination and substitution eliminates the hazard by using different equipment or processes that achieve the same outcomes. For example:

- a. Replace a manual operation with robotics.
 - b. Replace old equipment with a newer model that is equipped with safety devices.
- (2) Engineering controls incorporate safety mechanisms into the design of equipment or the configuration of the work site, or introduce new equipment, that will reduce or eliminate employee exposures to the hazard. For example:
- a. Provide a mechanical lifting device for a manual lifting task that requires heavy exertion.
 - b. Localized ventilation.
- (3) Administrative controls implement new (or modify existing) methods for detecting and addressing hazards, which include but are not limited to:
- a. Planning
 - b. Protocols (P-1 through P-31)
 - c. Policies
 - d. Procedures
 - e. Job Safety Analysis Manual (Pub 517)
 - f. Training and certification programs
 - g. Inspection processes and checklists
 - h. Maintenance schedules
 - i. PennDOT Daily Safety Talk Book (Pub 247) and mandatory safety talks as directed
 - j. Pre-Operation Process
 - k. Design Strategies
 - l. Communication/Warning Systems
 - m. Job/Employee Selection
- (4) PPE shall be implemented when feasible controls have been utilized and hazard exposures still exist. Employees are provided with protective equipment to reduce the risk of severity of the inevitable exposure. Refer to Protocol 2, Personal Protective Equipment for examples and additional information.
- D. Management is responsible to ensure that all corrective actions are implemented in a timely manner.
- E. If there is evidence of a safety violation after the investigation has been completed, the enforcement procedures will be followed as described in Chapter L - Recognition, Rules and Enforcement.

6. Accident and Near Miss Records Auditing Procedures

This section establishes procedures to evaluate the effectiveness of the accident reporting, investigation, and review process, and to ensure that the data in the Accident/Injury Tracking System (ATS) is accurate. This data is used to determine injury and fleet accident trends and to measure the performance of individual organizations. The following procedures should never delay the implementation of corrective actions identified during the investigation.

- A. Managers ensure a preliminary and finalized report is entered into ATS within the required time frames specified in Accident and Near Miss Reporting, Investigation, and Review Process. Managers also ensure that all required documents listed below are submitted electronically to the DSC within five business days unless otherwise specified.
- (1) Injury Accident
 - a. Accident Investigation Report (P-25)
 - b. Witness Statements

- c. Photographs, if applicable
 - d. Police report, if applicable (submit upon receipt)
 - (2) Fleet/Equipment Accident
 - a. Automobile Accident or Loss Notice (STD-541)
 - b. Accident Investigation Report (P-25)
 - c. Witness Statements
 - d. Photographs
 - e. Police Report (submit upon receipt)
 - (3) Near Miss
 - a. Workers' Compensation Claim Form (when applicable)
 - b. Near Miss Form (P-73)
 - c. Witness Statements
 - d. Photographs
- B. Upon receipt of the above documents, the District Safety Coordinator accesses the secured folder at <P:\PENNDOT SHARED\Highway Administration\Employee Safety Division\ATS\Records Management>. Access to this folder is limited to the Employee Safety and Training Division and DSCs.
 - (1) The DSC opens the folder for their respective district, creates a new folder for each ATS record using the following naming convention, and saves all required documents for that record in that folder. Additional documentation must be saved in this folder as it is received.
 - (2) The naming convention is as follows and below that are examples for each type of event in the Lancaster County Maintenance District 8-7 on July 14, 2013:
Naming Convention: Org Code, Employee Name, Event Type, Date of Event
 - a. Fleet Accident: 0870 John Doe, Fleet, 07-14-2013
 - b. Equipment Accident: 0870, John Doe, Equipment, 07-14-2013
 - c. Work-Related Injury: 0870, John Doe, Injury, 07-14-2013
 - d. Fleet and Injury: 0870, John Doe, Fleet & Injury, 07-14-2013
 - e. Equipment and Injury: 0870, John Doe, Equipment & Injury, 07-14-2013
 - f. Near Miss: 0870, John Doe, Near Miss, 07-14-2013
 - g. Near Miss (anonymous report) 0870, Near Miss, Near Miss, 07-14-2013
 - (3) The DSC reviews all documentation and the corresponding ATS record to ensure all data in ATS is accurate and consistent with the investigation documentation and notifies the Employee Safety and Training Division promptly of any corrective actions for accident prevention that should be considered for implementation in other organizations.
- C. The Employee Safety and Training Division will audit the documents in the secured folder and make appropriate changes and corrections to the data in ATS.
 - (1) If any changes need to be made to an ATS record, these will be communicated via email to the DSC for them to review with the appropriate manager(s) and to respond.
 - (2) If districts want to refute any changes, they must do so via email with supporting documentation attached within 10 days.
 - (3) Upon completion of each audit, the Employee Safety and Training Division will transfer accident file folders to the corresponding archive folder. Archive folders are organized by fiscal year and the four digit organization code.
- D. DSC may continue to access these electronic files, as needed.

7. Program Review

This chapter will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

8. Recordkeeping

This chapter contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Topic
1	PPIM 12-067 Injury-Incident Notification and Handling Process (Issued 10/12/04 and 4/9/12) and Accommodations for the Family of a Catastrophically Injured Employee Memo (Issued 11/16/16)
2	PPIM 13-156 Accident and Near Miss Reporting, Investigation, and Review Process (Issued 1/23/13, Effective 2/25/13 - slightly modified)
3	Pub 445 (10-13) page 12
4	Pub 445 (10-13) pages 13-16
5	Pub 445 (10-13) pages 20-21, and original, based on current practices
6	PPIM 13-129 Accident and Near Miss Records Auditing Procedures (Issued 12/21/09 and 10/21/13)
7-8	Original, based on AIPP requirements for Element M

Chapter N – Medical Supplies and Services

This chapter describes policies that ensure prompt attention and emergency treatment are available for injured or suddenly ill employees during the critical minutes between the occurrence of an injury or illness, and the arrival of emergency responders. Prompt attention may include cardiopulmonary resuscitation (CPR), general first aid, and the availability and use of an automated external defibrillator (AED).

1. CPR, First Aid, and AED Certification for Employees

In the absence of an infirmary, clinic, hospital, or trained emergency service provider in near proximity to the workplace, a person or group of persons should be adequately trained to render CPR and/or First Aid, including the proper use of an AED.

- A. The following guidance is to be used to determine the adequacy and availability of outside emergency assistance:
 - (1) A response time of up to 15 minutes is generally considered reasonable in workplaces such as offices having a more remote possibility of serious work-related injuries. In this case, a 911 call service may be a viable option assuming responders are able to get to the injured or ill person within a 15 minute time period. For example, Keystone Building employees would not be required to have CPR/First Aid training. However, with management's approval, any organization may offer CPR/First Aid training to volunteers.
 - (2) The definition of near proximity applies to workplaces with the potential for very serious injuries. Near proximity means that emergency care must be available within three to four minutes from the workplace if no onsite employee is trained to render first aid. Examples of very serious injuries include stopped breathing or cardiac arrest, crushing injuries or severe lacerations resulting in uncontrolled bleeding, or serious accidents involving hazardous work operations, falls from elevated areas, suffocation, electrocution, or amputation, to name a few. Examples of worksites which may require onsite services are field crews stationed in remote areas, training sites, and permanently occupied offices in more remote geographical areas. To meet the organizational needs, the CPR/First Aid course must be offered to any volunteers.
- B. Volunteer employees must be willing to perform CPR/First Aid services if the need arises. Employees trained in CPR/First Aid may have their names and telephone numbers made available or prominently posted so that anyone in need of their services can contact them.
- C. If employees trained in CPR/First Aid are needed or utilized, identify the methods for developing, implementing, and maintaining programs in accordance with either the American Heart Association or American Red Cross recommended guidelines.

2. First Aid Kits and Supplies

- A. The availability of first aid supplies to employees is required for the treatment of minor injuries that occur in the workplace.
 - (1) Every facility must have a minimum of one first aid kit per 100 employee occupants.
 - (2) Every work crew must have a minimum of one first aid kit per crew at the job site.
- B. The supervisor of the unit or crew where a first aid kit is located is responsible for maintaining the contents of the kit.
 - (1) Ensure that there are sufficient supplies for employees accessing each kit.
 - (2) Store kits at a location that is clearly marked and easily accessible to employees.
 - (3) Items with expiration dates must be replaced before they expire.
- C. First aid kits must not contain any pain or personal medications or expired items.

D. First aid kits must meet or exceed ANSI Z308.1-2015 Class A requirements (see Table 1).

TABLE 1: CLASSES OF FIRST AID KITS AND REQUIRED SUPPLIES PER ANSI Z308.1-2015				
First Aid Supply	Minimum Quantity		Minimum Size or Volume	
	Class A Kits	Class B Kits	(U.S.)	(Metric)
Adhesive Bandage	16	50	1 x 3 in.	2.5 x 7.5 cm
Adhesive Tape	1	2	2.5 yd.	2.3 m
Antibiotic Application	10	25	1/57 oz.	0.5 g
Antiseptic	10	50	1/57 oz.	0.5 g
Breather Barrier	1	1	N/A	N/A
Burn Dressing (Gel Soaked)	1	2	4 x 4 in.	10 x 10 cm
Burn Treatment	10	25	1/32 oz.	0.9 g
Cold Pack	1	2	4 x 5 in.	10 x 12.5 cm
Eye Covering (with Means of Attachment)	2	2	2.9 sq. in.	19 sq. cm
Eye/Skin Wash	1	0	1 fl. oz.	29.6 mL
	0	1	4 fl. oz.	118.3 mL
First Aid Guide	1	1	N/A	N/A
Hand Sanitizer	6	10	1/32 oz.	1.9 g
Medical Exam Gloves	2 pair	4 pair	N/A	N/A
Roller Bandage (2 inch)	1	2	2 in. x 4 yd.	5 cm x 3.66 m
Roller Bandage (4 inch)	0	1	4 in. x 4 yd.	10 cm x 3.66 m
Scissors	1	1	N/A	N/A
Splint	0	1	4.0 x 24 in.	10.2 x 61 cm
Sterile Pad	2	4	3 x 3 in.	7.5 x 7.5 cm
Tourniquet	0	1	1 in. (width)	2.5 cm (width)
Trauma Pad	2	4	5 x 9 in.	12.7 x 22.9 cm
Triangular Bandage	1	2	40 x 40 x 56 in.	101 x 101 x 142 cm

3. Communications

- A. New employees, preferably at their orientation, should be given a general background on the availability of CPR/First Aid along with the emergency call procedure for their facility.
- B. Annually communicate the policy/procedures for emergency care to all employees. An annual review should also include the adequacy and effectiveness of the program: work location procedures developed and adequate, current training certifications and contact information, employee training/notifications provided, and adequate PPE/emergency equipment provided and maintained as necessary.

4. Training Management

- A. Districts:
 - (1) District Training Coordinators will schedule their own FA/CPR/AED training sessions with a vendor. It is incumbent upon the training coordinators to ensure that upcoming trainings are placed in the LSO system. This will permit other PennDOT organizations, including but not limited to: Driver License Centers and Welcome Center employees, to anticipate and participate in neighboring trainings as needed.

- (2) Routinely schedule underlying certification training. This will allow all organizations to certify their employees at staggered times each year, eliminating the rush to recertify if certifications expire all at once. All districts shall use the following course code for the underlying certification: 78SAFE000023 (certification only) – First Aid/CPR/AED Cert.
- (3) Vendors are responsible to arrange for all training materials, mannequins, AED's and equipment for the training sessions.

5. Program Review

This chapter will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

6. Recordkeeping

This chapter contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Topic
1	PPIM 10-132 Availability of CPR/First Aid (Issued 7/2/10)
2	First Aid Kit Requirements memo (Issued 2/13/17)
3-4	Updated to reflect current practices
5-6	Updated

Chapter O – Quality Assurance

This chapter describes the methods for evaluating the effectiveness and quality of the workplace safety and health programs, and identifying opportunities for continuous improvement.

1. Written Policy/Procedure

- A. Employee Safety and Training Division analyzes the injury frequency, percentages, and trends at the end of every quarter, and compares those with the analyses for the same time period in the previous year to evaluate progress, and measure program effectiveness. The results are communicated to the Office of Administration (OA) as a quarterly report.
- B. At the end of fiscal year, the ATS data are analyzed and current rates of injury and fleet accidents are compared against the set goals of each organization by the Employee Safety and Training Division annually, and results are communicated to each organization with the status, as well as, next year set-goal, as described in following sections.

2. Maintenance Accreditation Performance Index (MAPI) Safety Measures

The County Maintenance Measurement Tool (CMMT) had functioned since 2004 and since needed a major refresh. County Accreditation generated a checklist that identified the essential functions to run a County Maintenance Organization. A new integrated metric system based on the principles of County Accreditation has been the key need for replacing the CMMT program and sustain the County Accreditation program. The Maintenance Accreditation Performance Index (MAPI) is a set of performance metrics established to actively measure and monitor County Maintenance Offices and provide the best available output for effective business and personnel development and to optimize efforts in the areas of Asset Management, Budget, Planning and Scheduling, Winter Management, Inventory Management, Fleet Management, Human Resources, and the Business of Maintenance.

- A. The maintenance organizations have the clear majority of the fleet accidents and injuries; therefore, the Employee Safety and Training Division is the business owner of three of these measures. Modifications to these measures are made in cooperation with the MAPI committee.
 - (1) Recordable Injury Correction and Management

The objective for each organization is to analyze their injury data, identify trends, and implement corrective actions to achieve the injury goal rate. Effectiveness is evaluated for each organization based on:

 - a. The successful development and implementation of a Safety Corrective Action Plan by the local management and safety committee, targeting injury accident trends.
 - b. How the fiscal year end rate compares to the injury rate goal.
 - (2) Fleet Accidents Correction and Management

The objective for each organization is to analyze their fleet accident data, identify trends, and implement corrective actions to achieve the fleet accident rate goal. Effectiveness is evaluated for each organization based on:

 - a. The successful development and implementation of a Safety Corrective Action Plan by the local management and safety committee, targeting fleet accident trends.
 - b. How the fiscal year end rate compares to the fleet accident rate goal.
 - (3) Safety Inspections

The objective is to identify hazards and unsafe practices in maintenance crew operations and implement corrective actions that will reduce employee exposure to unsafe conditions.

 - a. Effectiveness is evaluated for each organization based on the evidence of proactive measures that were taken to address unsafe acts and conditions in the work area, which is gathered through the inspection process.
 - b. Each crew safety inspection is scored and a final fiscal year end score is calculated using this formula: Sum of Inspection Scores divided by Number of Inspections.

- B. A representative of the Employee Safety and Training Division attends MAPI committee meetings upon invitation or request to discuss observations regarding the effectiveness of these measures, requests to revise or discontinue any of these measures, and proposals to develop new measures pertaining to employee safety and health.
- C. Safety Corrective Action Plans
County management staff must work with their county safety committee to look at their injury and accident data and develop a specific and actionable Safety Corrective Action Plan that addresses their injury and accident trends in conjunction with MAPI Guidelines and Goals.
 - (1) County Manager Responsibilities
 - a. Work within the MAPI Guidelines as it pertains to Injury Rates, Fleet Accident with Driver Error Rates and Crew Inspection Scores.
 - b. Work with the District Safety Coordinator and Safety Committees to implement strategies to meet the reduction goal rates for identified MAPI Safety measures.
 - c. Coordinate the completion of the plan and document progress on the plan throughout the fiscal year in accordance with established MAPI Goal Guidelines.
 - (2) Safety Committee Responsibilities
 - a. Review statistics and identify the top three trends for injuries and fleet accidents.
 - b. Participate in the development of the MAPI corrective action plan with the county manager and the District Safety Coordinator (DSC).
 - c. Participate in the completion of the actions identified in the MAPI corrective action plan throughout the fiscal year.
 - (3) District Safety Coordinator (DSC) Responsibilities
 - a. Assist the county manager and safety committee with reviewing statistics, identifying trends and developing a Safety Corrective Action Plan.
 - b. Review each plan for accuracy regarding trends and for appropriate actions to address these trends. Districts safety committee may be invited to participate in the review.
 - c. Ensure all counties have updated and/or developed their Safety MAPI Corrective Action Plans in conjunction with the manager's MAPI corrective action plan responsibilities described above.
 - d. When requested by Employee Safety and Training Division, confirm for each of the counties whether the safety corrective action plans were developed and completed from the MAPI corrective action plan entries on the MAPI Dashboard.
 - (4) Employee Safety and Training Division Responsibilities
 - a. Assist with any questions regarding the above requirements.
 - b. Ensure that the data used for safety MAPI measurements is current and correct.

3. Communications

- A. The MAPI committee distributes a new edition of the MAPI Guidelines and Criteria each fiscal year during the month of July to Assistant District Executives for Maintenance and County Maintenance Managers.
- B. The Employee Safety and Training Division provides fiscal year end scores to the MAPI committee. The committee includes these scores in a fiscal year end report by September of each year, which is distributed to Assistant District Executives for Maintenance and County Maintenance Managers.

4. Program Review

- A. This chapter will be reviewed annually to ensure that all information is current.
- B. Details of the annual review will be documented under Recordkeeping.

5. Recordkeeping

- A. Records of all statistical reports, loss analyses, and program reviews/evaluations are maintained on file or in a database for at least five years.
- B. This chapter contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Topic
1, 3	Original, based on current practices
2	CMMT Memo from BHR Director and original, based on current practices
4-5	Original, based on AIPP requirements for Element O

Chapter P – Protocols

1. Applicable Standard

Under the Accident and Illness Prevention Program (AIPP) Elements section of the Pennsylvania Workers' Compensation Health and Safety Regulations, 34 PA Code Chapter 129, there is a requirement for written protocols to address hazards that are unique to specific tasks or operations.

2. Purpose

Each protocol describes the task(s) or operation(s) to which it applies and the minimum requirements to ensure they are performed in the safest manner possible.

3. Content

Each protocol may include the following content:

- A. The purpose and scope of the protocol.
- B. Applicable federal, state, or national consensus standards and organizations for reference and guidance.
- C. Definitions and general requirements.
- D. Guidance to determine which locations and operations the protocol applies to and to document and maintain the completed assessment for recordkeeping.
- E. Procedures: The list provides hazard or program specific procedures that must be addressed in the written procedure.
- F. Training requirements that include participants, content, frequency, and recordkeeping.
- G. Checklists and/or forms
- H. Method(s) for evaluating the effectiveness of the protocol at addressing workplace hazards, and preventing injuries and illnesses, including the documentation of that evaluation.

4. Program Review

This chapter will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

5. Recordkeeping

This chapter contains all new information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Topic
1-5	Original, based on AIPP requirements for Protocols and current practices

Protocol 1A - Machine Safeguarding

Section	Topic	Page
1	Policy	P1A - 1
2	Scope	P1A - 1
3	Applicable Standards	P1A - 1
4	Definitions	P1A - 1
5	Roles and Responsibilities	P1A - 2
6	Hazard Assessment	P1A - 3
7	Machine Guarding	P1A - 3
8	Machine Safeguarding Procedures	P1A - 4
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13	Appendix A – Types of Machine Guarding	P1A - 6

1. Policy

PennDOT is committed to ensuring that the hazards associated with machines, equipment, vehicles and power tool use have been adequately and appropriately addressed. This protocol provides PennDOT employees with the basic information for assuring a safe workplace, free from recognized machine guarding hazards which may cause serious injury or amputation.

2. Scope

- A. This protocol applies to all PennDOT employees engaging in work with machines, equipment, vehicles and power tools that are exposed to a point of operation, in-going nip points, reciprocating motion, rotating parts, flying chips and spark hazards. These procedures shall be applied in a manner consistent with federal laws and commonwealth policy.
- B. Any machine part, function or process that may cause injury, shall be safeguarded. When the operation of a machine or accidental contact with it can injure the operator or others in the vicinity, the hazards shall be either controlled or eliminated.

3. Applicable Standards

- A. OSHA 1910, Subpart O – Machinery and Machine Guarding
- B. ANSI B11.0 Safety of Machines – General Requirements and Risk Assessment

4. Definitions

- A. Cutting Actions: Cutting action results when rotating, reciprocating or transverse motion is imparted to a tool so that material being removed is in the form of chips. Exposed points of operation shall be guarded to protect the operator from contact with cutting hazards, being caught between the operating parts and from flying particles and sparks.
- B. Enclosures: Mounted physical barriers which prevent access to moving parts of machinery, equipment, vehicles or power tools.

- C. Guards: Barriers that prevent contact with moving portions or parts of exposed machinery or equipment which could cause physical harm.
- D. Machine Hazard: Occurs at the point-of-operation where the actual work is performed and can be created by components which transmit energy, such as pulleys, belts, chains, gears, couplings or flywheels; or other parts which move while the machine is working, including reciprocating, rotating and transverse parts.
- E. Nip Points: In-running machine, equipment or vehicle parts, which rotate towards each other or where one part rotates towards a stationary object.
- F. Point-of-Operation: The area on a machine, vehicle or item of equipment, where work is being done and material is positioned for processing or change by the machine, equipment or vehicle.
- G. Power Transmission: Any mechanical parts which transmit energy and motion from a power source to the point-of-operation.
EXAMPLE: Gear and chain drives, cams, shafts, belt and pulley drives and rods.
NOTE: Components which are seven feet or less from the floor or working platform shall be guarded.
- H. Reciprocating Motions: Motions produced by the back and forth movements of certain machines, vehicles or equipment parts.
- I. Rotating Motions: Motion of a rigid body which takes place in such a way that it moves in circles about an axis.
- J. Shearing Action: Motion involves applying power to a shear or knife to trim or shear materials such as metal. The danger of this type of action lies at the point-of-operation where materials are actually inserted, maintained and withdrawn. Guarding is accomplished through fixed barriers, interlocks, remote control placement (two hand controls), feeding or ejection.
- K. Shear Points: The reciprocal (back and forth) movement of a mechanical part past a fixed point on a machine.
- L. Transverse Motions: Transverse motions is movement in a straight, continuous line; moving parts can catch or strike a worker in a pinch point or shear point. This is hazardous due to straight line action and in-running nip points. Pinch and shear points also are created with exposed machinery, equipment, vehicles and power tool parts operating between a fixed or other moving object. A fixed hinged guard enclosure provides protection against this exposure.

5. Roles and Responsibilities

- A. District Executives/Bureau Directors
 - (1) Ensure the protocol is implemented.
 - (2) Provide resources to ensure proper safeguarding equipment is available.
- B. Employee Safety and Training Division
 - (1) Maintain the protocol.
 - (2) Assist and conduct machine safeguarding hazard assessments (Form P-64) when applicable.
 - (3) Notify the appropriate manager/supervisor of damaged or missing guards regarding machines, equipment, vehicles or power tools when identified or during field inspections.
 - (4) Ensure that the overall protocol is evaluated annually for effectiveness or updates.
- C. Managers/Supervisors
 - (1) Attend any necessary training to ensure understanding and implementation of PennDOT's machine safeguarding procedures.
 - (2) Coordinate or provide training outlined in this protocol.
 - (3) Ensure damaged machines, equipment and tools are either removed from service, repaired or replaced.

- (4) Stop any employees from using machines, equipment, vehicles or power tools that have damaged/missing guards.
- (5) Inspect machinery, equipment, vehicles and power tools to ensure proper machine safeguards are in place and used accordingly.
- (6) Ensure employees are following the appropriate procedures outlined in this protocol.
- (7) Provide timely follow-up on employee concerns.

D. Employees

- (1) Comply with all PennDOT safety rules and regulations concerning machine safeguarding.
- (2) Attend required training or instruction.
- (3) Properly tag and not use damaged or defective machines, equipment, vehicles or tools.
- (4) Inspect machines, equipment, vehicles or tools before each use.
- (5) Contact a manager/supervisor to report damaged or defective machines, vehicles, equipment or tools or missing safeguards.
- (6) The Machine Guarding Hazards Checklist form may be utilized anytime for proactive safety measures. The form shall be completed when a hazard has been observed and reported by any employee of an unguarded point of operation, in-going nip point, reciprocating motion, rotating parts and flying chips or sparks that could cause serious or potential harm to an employee on any machine, equipment, vehicle or power tool.

6. Hazard Assessment

- A. Machine Guarding Hazards Checklist form (P-64) shall be completed by at least two of the following: A representative of the Employee Safety and Training Division, District Safety Coordinators, applicable equipment supervisor, mechanical supervisor, county maintenance manager or county equipment manager to identify:
- (1) Work locations, machines, equipment, vehicles, power tools, processes or tasks where machine guarding is being utilized or needed.
 - (2) Assess hazards that could potentially injure employees near points-of-operation, in-going nip points, reciprocating motion, rotating parts and flying chips or sparks.
 - (3) The effectiveness of the safeguards that are currently being utilized.
 - (4) Form P-64 shall only be completed per make/model of the piece of equipment, machinery, vehicle or power tool to eliminate redundancy. However, if a corrective action needs to be implemented, the corrective action shall be completed on all equipment, machinery, vehicle or power tool specific make/model that a corrective action was determined.
- B. Once the Machine Guarding Hazards Checklist has been completed, the manager or supervisor will review all information regarding corrective action(s) if warranted, with affected employees, and the corrective actions that will be taken.
- C. One of the above mentioned representatives (6.A.) will complete the preliminary Machine Guarding Hazards Checklist (P-64) and identify corrective action steps. A second representative (post) will review the Machine Guarding Hazards Checklist (P-64) and corrective action to determine/approve if the machine, equipment, vehicle or power tool shall be returned to operation.

7. Machine Guarding

Machine guards will protect the operator and others in the area from the point-of-operation, in-going nip points, reciprocating motion, rotating parts, flying chips or sparks. Guards will not interfere with the operations of the machinery, equipment, vehicles, power tools, processes or tasks or create new hazards and will allow for safe lubrication or maintenance of the machinery, equipment, vehicle, power

tool, process or task. There are several types or methods used to protect the operator and other employees in the area from hazards:

- A. Guards – Fixed, interlocked, adjustable or self-adjusting.
- B. Devices – Presence sensing, pullback, restraint, safety controls or gates.
- C. Safeguarding by location or distance.
- D. Potential feeding and ejection methods – Automatic/semi-automatic feed, auto or semi-automatic ejection or robots.
- E. Safeguard Requirements:
 - (1) Conform to or exceed ANSI and OSHA requirements
 - (2) Be considered a permanent part of the machine
 - (3) Afford maximum protection
 - (4) Prevent access to danger zone during operation
 - (5) Not weaken the structure of the machine
 - (6) Not interfere with machine operation
 - (7) Be designed for the specific machine and job
 - (8) Be fire and corrosive resistant
 - (9) Be durable
 - (10) Be in place and secured at all times
 - (11) Guard against objects falling on the operator or moving parts
 - (12) Not be a source of additional hazard
- F. Miscellaneous aids – Awareness barriers, protective shields, hand-feeding or holding fixtures.

8. Machine Safeguarding Procedures

- A. Do not use machines, equipment, vehicles, power tools, processes or tasks unless you have been trained and authorized to do so.
- B. Do not remove or bypass safety devices.
- C. Guards will only be removed during maintenance and repairs, when the machine, equipment, vehicle or power tool is locked out (reference Protocol 5).
- D. Inspect machines, equipment, vehicles and power tools before use and report any deficiencies immediately.
- E. Machines, equipment, vehicles and power tools with a broken or missing guard will not be used until they are repaired or replaced by authorized employees.
- F. Any gap or hole within a safeguard that is ¼ inch or larger shall be replaced or fixed.
- G. Machines, equipment, vehicles and power tools shall be adequately guarded so that an employee cannot reach over, in, under or around a safeguard to be exposed to a hazard.
- H. Do not reach into machines, equipment, vehicles or power tools to clear materials or jams.
- I. Always follow the manufacturer's operating instructions.

9. Maintenance Operations

- A. All personnel performing servicing and maintenance of machines, equipment, vehicles or power tools shall be properly trained, qualified and competent to perform the task. If maintenance operations require safeguards to be removed for servicing of machines, equipment, vehicles, power tools, or the employee shall place any part of their body in a hazardous area, lockout/tagout shall take place. Refer to Protocol 5 Lockout/Tagout for additional information.

- B. Exceptions include plug and cord type equipment where the maintenance person maintains control of the plug, and mobile equipment such as tractors and other power equipment. Mobile equipment shall be shut down during maintenance that requires guards to be removed. Refer to Protocol 5 Lockout/Tagout for additional information.

10. Training

A. Initial

- (1) Initial training is required to any employee that will be exposed to any point-of-operation hazard, in-going nip points, reciprocating motions, rotating parts and flying chips or sparks. Servicing/maintenance staff will be required to complete the initial training portion which will include the following.
 - a. Hazardous exposures and control measures.
 - b. Types of safeguards and how they protect from hazards.
 - c. Proper operation and limitation of safeguards.
 - d. Maintenance, care and inspection of safeguards.
 - e. Procedures for the temporary removal of safeguards.
 - f. Procedures for reporting damaged or missing safeguards.
 - g. Safe work practices.

B. Refresher

- (1) Refresher training content will be the same as outlined in initial training. Refresher training will be required under the following circumstances:
 - a. When changes in the workplace or in the types of safeguards used render previous training obsolete.
 - b. When inadequacies in an affected employee’s knowledge indicate that the employee has not retained the requisite understanding or skill.
 - c. When there is an accident involving the safeguarding of machinery, equipment, vehicles or power tools.
 - d. Upon request from a manager/supervisor.

11. Program Review

The effectiveness of this program in preventing workplace hazards, injuries and illnesses will be evaluated annually by the Employee Safety and Training Division with appropriate actions taken to address any deficiencies found.

12. Recordkeeping

Written training records for each employee detailing training and the date it was received will be documented and kept on file at the applicable county level for the duration of the employee’s employment.

Hazard assessments will be kept on file at the district level for the duration of the service life or until the machinery, equipment, vehicle or power tool make/model is discontinued from service by maintenance personnel.

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Topic
1-13	Original based on AIPP structure for protocols

13. Appendix A – Types of Machine Guarding

Types of Machine Safeguarding			
Guards			
Method	Safeguarding Action	Advantages	Limitations
Fixed	Provides a barrier	Can be constructed to suit many specific applications. In-plant construction is often possible. Can provide maximum protection. Usually requires minimum maintenance. Can be suitable for high production, repetitive operations.	May interfere with visibility. Can be limited to specific operations. Machine adjustment and repair often require its removal, thereby necessitating other means of protection for maintenance personnel.
Interlocked	Shuts off or disengages power and prevents starting of machine when guard is open; should require the machine to be stopped before the worker can reach into the danger area.	Can provide maximum protection. Allows access to machine for removing jams without time-consuming removal of fixed guards.	Requires careful adjustment and maintenance. May be easy to disengage.
Adjustable	Provides a barrier that may be adjusted to facilitate a variety of production operations.	Can be constructed to suit many specific applications. Can be adjusted to admit varying sizes of stock.	Hands may enter danger area. Protection may not be complete at all times. May require frequent maintenance and/or adjustment. The guard may be made ineffective by the operator. May interfere with visibility.

Types of Machine Safeguarding			
Devices			
Method	Safeguarding Action	Advantages	Limitations
Self-Adjusting	Provides a barrier that moves according to the size of the stock entering.	Off-the-shelf guards are often commercially available.	Does not always provide maximum protection. May interfere with visibility. May require frequent maintenance and adjustment.
Photoelectric (optical)	Machine will not start cycling when the light field is broken by any part of the operator's body during cycling process, immediate machine braking is activated.	Can allow freer movement for operator.	Does not protect against mechanical failure. May require frequent alignment and the calibration. Excessive vibration may cause lamp filament damage and premature burnout. Limited to machines that can be stopped.
Radio frequency (capacitance)	Machine cycling will not start when the capacitance field is interrupted. When the capacitance field is disturbed by any part of the operator's body during the cycling process immediate machine braking is activated.	Can allow freer movement for operator.	Does not protect against mechanical failure. Antennae sensitivity shall be properly adjusted. Limited to machines that can be stopped.
Electro-mechanical	Contact bar or probe travels a predetermined distance between the operator and the danger area. Interruption of this movement prevents the starting of machine cycle.	Can allow access at the point of operation.	Contact bar or probe shall be properly adjusted for each application; this adjustment shall be maintained properly.

Types of Machine Safeguarding			
Devices (continued)			
Method	Safeguarding Action	Advantages	Limitations
Pullback	As the machine begins to cycle, the operator's hands are pulled out of the danger area.	Eliminates the need for auxiliary barriers or other interference at the danger area.	Limits movement of operator. May obstruct workspace around operator. Adjustments shall be made for specific operations and for each individual. Requires frequent inspections and regular maintenance. Requires close supervision of the operator's use of the equipment.
Restraint (holdback)	Prevents the operator from reaching into the danger area.	Little risk of mechanical failure.	Limits movements of operator. May obstruct workspace. Adjustments shall be made for specific operations and each individual. Requires close supervision of the operator's use.
Safety trip controls: Pressure-sensitive body bar; Safety tripod; Safety tripwire	Stops machine when tripping.	Simplicity of use.	All controls shall be manually activated. May be difficult to activate controls because of their location. Only protects the operator. May require special fixtures to hold work. May require a machine brake.
Two-hand control	Concurrent use of both hands is required, preventing the operator from entering the danger area.	Operator's hands are at a predetermined location. Operator's hands are free to pick up a new part after first half of cycle is completed.	Requires a partial cycle machine with a brake. Some two-hand controls can be rendered unsafe by holding with blocking, thereby permitting one-hand operation. Protects only the operator.

Types of Machine Safeguarding			
Devices (continued)			
Method	Safeguarding Action	Advantages	Limitations
Two-hand trip	Concurrent use of two hands on separate controls prevents hands from being in danger area when machine cycle starts.	Operator's hands are kept away from danger area. Can be adapted to multiple operations. No obstruction to hand-feeding. Does not require adjustment for each operation.	Operator may try to reach into danger area after tripping machine. Some trips can be rendered unsafe by holding with arm or blocking, thereby permitting one-hand operation. Protects only the operator. May require special features.
Gate	Provide a barrier between danger area and operator or other personnel.	Can prevent reaching into or walking into the danger area.	May require frequent inspection and regular maintenance. May interfere with operator's ability to see work.

Protocol 1B - Electrical Safeguarding

Section	Topic	Page
1	Policy	P1B - 1
2	Scope	P1B - 1
3	Applicable Standards	P1B - 1
4	Definitions	P1B - 2
5	Roles and Responsibilities	P1B - 2
6	Hazard Assessment	P1B - 3
7	Examination, Installation and Use of Electrical Equipment	P1B - 3
8	Safety Requirements for Qualified Persons	P1B - 4
9	Approach Boundaries to Live Parts	P1B - 5
10	High Voltage Access	P1B - 6
11	Labeling	P1B - 7
12	Safe Electrical Work Practices – Electrical Tools and Extension Cords	P1B - 7
13	Training	P1B - 8
14	Program Review	P1B - 8
15	Recordkeeping	P1B - 8
App. A	Approach Boundaries	P1B - 9
App. B	Personal Protective Equipment	P1B - 10
App. C	Arc Flash PPE for Alternating Current Systems	P1B - 12
App. D	Arc Flash PPE Categories for Direct Current Systems	P1B - 13

1. Policy

PennDOT is committed to ensuring risks associated with working with and around electrical hazards have been adequately and appropriately addressed. This protocol provides PennDOT employees along with electricians with the basic information for assuring a safe workplace, free from recognized electrical hazards which may cause serious injury or death.

2. Scope

This protocol applies to all PennDOT employees engaging in work with and/or around electricity. This protocol is also applicable to employees who perform service and maintenance work on electrical equipment, vehicles or other powered equipment that are 50 volts or higher.

3. Applicable Standards

- A. OSHA 1926, Subpart K, Electrical
- B. OSHA 1910, Subpart S, Electrical
- C. OSHA 1910.269, Electrical Power Generation, Transmission and Distribution
- D. NFPA 70, National Electric Code
- E. NFPA 70E, Standard for Electrical Safety in the Workplace

4. Definitions

- A. Arc Flash Hazard: A source of possible injury or damage to health associated with the release of energy caused by an electric arc.
- B. Arc Flash Protection Boundary: An approach limit at a distance from exposed live parts within which a person could receive a second degree burn if an electrical arc flash were to occur.
- C. Current: The flow of electric charges (electrons) that move past a specific point in a conductor within a specific amount of time.
- D. Electrically Safe Work Condition: A state in which a conductor or circuit part to be worked on or near has been disconnected from an energized part, locked/tagged in accordance with established procedures, tested to ensure the absence of voltage and grounded if determined necessary.
- E. Energized: Electrically connected to a source of voltage.
- F. Exposed (as applied to live parts): Capable of being inadvertently touched or approached nearer than a safe distance by a person. It is applied to parts that are not suitably guarded, isolated, or insulated.
- G. Ground: A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or some conducting body that serves in place of the earth.
- H. Guarded: Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach or contact by persons or objects to a point of danger.
- I. High Voltage: Any voltage more than 600 volts.
- J. Live Parts: Energized conductive components.
- K. Limited Approach Boundary: A shock protection boundary to be crossed by only qualified persons (at a distance from a live part) which are not to be crossed by unqualified persons unless escorted by a qualified person.
- L. Low Voltage: Voltage less than 600 volts.
- M. Prohibited Approach Boundary: A shock protection boundary to be crossed by only qualified personnel, which when crossed by a body part or object requires the same protection as if direct contact is made with a live part.
- N. Restricted Approach Boundary: A shock protection boundary to be crossed by only qualified persons which, due to its proximity to a shock hazard, requires the use of shock protection techniques and equipment when crossed.
- O. Qualified Person: A person specifically trained in construction and operation or maintenance of the electric power generation, transmission and distribution equipment involved, and the hazards involved therein (Refer to Section 13).
- P. Voltage: The potential difference (pressure or force) that causes charged particles (electrons) to move through a conductor.
- Q. Volts (V): The unit of measurement of voltage.

5. Roles and Responsibilities

- A. District Executives/Bureau Directors
 - (1) Ensure the proper implementation of this protocol in accordance with PennDOT procedures.
 - (2) Provide the necessary resources to ensure PennDOT employees involved with electrical work are properly trained and equipped to perform the work in accordance with this protocol.

B. Employee Safety and Training Division

- (1) Establish and maintain PennDOT policy and guidance for implementing an effective electrical safeguarding protocol.
- (2) Notify the appropriate manager/supervisor of damaged or electrical lights and cords when identified or during field inspections.
- (3) Provide timely follow-up on employee concerns.

C. Managers/Supervisors

- (1) Visually inspect equipment quarterly to ensure proper electrical safeguards are in place and used accordingly (look for damaged or frayed cords, extension cords being used as permanent wiring, etc.).
- (2) Ensure all electrical equipment is appropriately labeled.
- (3) Develop and maintain a list of all qualified employees under their supervision.
- (4) Report any electrical hazards to the facility manager immediately.

D. Employees

- (1) Follow electrical safeguarding procedures and labels.
- (2) Visually inspect machinery, vehicles, and equipment before each use for damaged electrical components.
- (3) Report electrical hazards immediately to managers/supervisors.

6. Hazard Assessment

- A. Before any work will be done on or near live parts operating at 50 volts or more, or where an electrical hazard exists, a qualified person shall complete an Electrical Safeguarding Hazard Assessment, Form P-61. The hazard assessment shall at a minimum include a review of:
 - (1) The machine, equipment, vehicle, process, or task
 - (2) Voltage of the machine, equipment, vehicle, process, or task on which to be worked
 - (3) Hazards
 - (4) Recommended safeguards and corrective actions
- B. All electrical circuit conductors and circuit parts will not be in an electrically safe condition until all sources of energy are removed, the disconnecting means is under lockout/tagout, the absence of voltage is verified by an approved testing device and where exposure to energized facilities exists, are temporarily grounded.

7. Examination, Installation and Use of Electrical Equipment

- A. All electrical equipment will be installed and examined to ensure it is free from recognized hazards that are likely to cause serious physical harm or death to employees.
- B. Proper safety will be determined by using the following considerations:
 - (1) Suitable installation of Underwriters Laboratory (UL) listed and labeled equipment and National Fire Protection Association (NFPA) 70: National Electric Code.
 - (2) Proper mechanical strength and durability, including parts enclosing and protecting equipment.
 - (3) Protection from heating effects under normal usage.
 - (4) Arc flash protection.
 - (5) Proper classification by type, size, voltage, current capacity, and specific use.
 - (6) Any other factors that shall be considered to ensure employee safety.

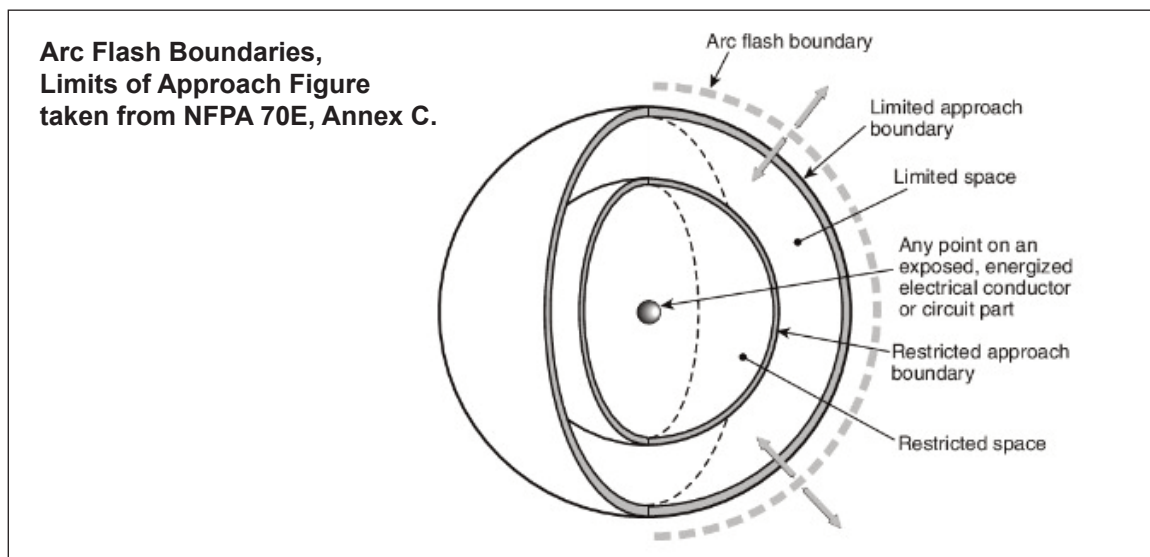
8. Safety Requirements for Qualified Persons (Electricians)

- A. When working on or near potentially energized machinery, vehicles, or equipment, wearing jewelry or any other conductive metals is prohibited while the electrical work is being completed.
- B. Before beginning work, energized electrical conductors and circuit parts operating at voltages equal to or greater than 50 volts shall be put into an electrically safe work condition before an employee performs work if:
 - (1) The employee is within the limited approach boundary, or
 - (2) The employee interacts with equipment where conductors or circuits parts are not exposed but an increased likelihood of injury from an exposure to an arc flash hazard exists.
- C. Lockout/Tagout (Protocol 5) shall be followed at all times when working on electrical equipment or power circuits.
- D. Before repairing or working on power circuits, lock open the control devices, open disconnect switches and/or remove fuses. Control devices, open disconnect switches and fuses shall never be locked in the closed position.
- E. Consider every circuit to be live and all power sources and power circuits as potentially dangerous.
- F. Before any work is to begin on any electrical circuit, a qualified trained person shall use the appropriate testing equipment to verify the machine, equipment or vehicle has been de-energized. If the circuit itself is to be tested, the testing equipment shall be checked for proper operation immediately before and after each test.
- G. Disconnect power before inserting or disconnecting the connector of a portable power cable operating at more than 480 volts.
- H. Indoor areas containing electrical equipment such as an electrical disconnect and electrical panels will be maintained in a clean and orderly fashion and will not be used as storage and will have adequate illumination.
- I. Objects will not be placed within 36 inches of the front of an electrical panel or impede the view of the electrical panel.
- J. Properly identify all switches and controls for electrical equipment. Attach tags or use temporary lettering on new installations until permanent nameplates are attached.
- K. When electrical circuits are disconnected and not removed, wires will be disconnected and taped at both ends with a tag attached giving the location where the opposite end terminates.
- L. Before opening or closing a switch, determine the operating condition of the circuit. This precaution provides protection in the event of a faulty circuit.
- M. Open or close a switch in a firm, positive manner, using sufficient force to make or break full contact of blades quickly. This will prevent unnecessary heating or arcing of the switch blades. Stand to one side during this operation and wear appropriate personal protective equipment.
- N. Ensure that switches are always fully opened or closed. Switches left in a partly open position may cause an arc or flashover.
- O. For automatic protection against the hazards of current leakage to ground (e.g., shock, fire, equipment damage, injury from secondary accidents), a ground fault circuit interrupter will be utilized whenever working in a confined area or where moisture is prevalent.
- P. If working in an atmosphere containing flammable/combustible vapors, all equipment and tools will be explosion proof/ignition proof rated.
- Q. All high voltage circuits or equipment will not be considered to be in an electrically safe condition until such circuits or equipment have been cleared, tagged, voltage tested, shorted and grounded. The following conditions shall be met:
 - (1) The lines and equipment have been de-energized
 - (2) There is no possibility of contact with another energized source
 - (3) There is no hazard of induced voltage present

- R. Use an approved low voltage fuse puller to remove fuses on a circuit of less than 500 volts where no switch is provided.
- S. Use an approved high voltage fuse puller to remove fuses on circuits of 500 volts or more where no switches are provided.
- T. Remove fuses by breaking contact with the hot side of the circuit first. Use the reverse procedure when replacing fuses. Insert the fuses in the cold terminal first. Appropriate personal protection equipment shall be worn.
- U. Discharge capacitors before handling or making any connection. Discharge may be accomplished safely by use of an insulated jumper or bar with adequate current-carrying capacity after a wait of at least five minutes after disconnecting.
- V. Interlocks and other safety devices will be maintained in a safe, operable manner and will not be modified to defeat its function except to test, repair or adjust the device.
- W. Guards will be provided around all live parts operating at greater than 150 volts to ground without an insulating cover unless the location of the part gives sufficient vertical and horizontal clearance in order to minimize the possibility of employee or equipment contact.
- X. Rooms and spaces that contain exposed electric supply lines or equipment operating at greater than 50 volts and within eight feet of the nearest working surface, or containing lines or equipment operating at up to 600 volts and guarded only by location, or containing lines or equipment operating at greater than 600 volts that are not contained in grounded cabinets will be enclosed with fences, screens, or partitions, and have posted warning signs displayed at the entrances. Entrances that are not watched by qualified personnel shall be kept locked. Unqualified persons will not enter such spaces when the equipment is energized.
- Y. Before re-energizing equipment, a qualified person will conduct a final visual inspection to verify that all tools, jumpers, grounds, and other similar devices have been removed.
- Z. When re-energizing equipment, all employees exposed to the hazards associated with re-energizing the equipment will be safely located and instructed to stay clear.
- AA. All electrical panels shall be kept unlocked unless approved by the Bureau Director of Office Services or designee.

9. Approach Boundaries to Live Parts

- A. Observing a safe approach distance from exposed energized parts is an effective means of maintaining electrical safety. As the distance between a person and the exposed energized conductors or circuit parts decreases, the potential for electrical incident increases.



- B. Safe approach distances will be determined for all tasks in which approaching personnel are exposed to live parts.
- C. Safe approach distances to fixed live parts can be determined by referring to Table 1 and Table 2 of Appendix A of this protocol for NFPA 70E, Table 130.4 (E)(a) and (E)(b) Shock Protection Approach Boundaries to Exposed Energized Conductors or Circuit Parts for Alternating Current Systems and for Circuit Parts for Direct Current Voltage Systems.
- D. Unqualified persons may only cross the limited approach boundary when they are under the direct supervision of a qualified person.
NOTE: Arc Rated PPE is required for any employee crossing the arc flash boundary. See Appendix B and Appendix C for the arc flash PPE categories for alternating and direct current systems.
- E. Qualified persons may not cross or take any conductive object closer than the restricted approach boundary unless one of the following conditions applies:
 - (1) The qualified person is guarded from energized electrical conductors or circuit parts operating at 50 volts or more.
 - (2) The energized electrical conductors, circuit parts or any other conductive object(s) are insulated from the qualified person.
- F. Qualified persons are only allowed to cross the restricted approach boundary to perform work on energized parts. The following precautions must be taken when the qualified person crosses the restricted approach boundary:
 - (1) The qualified person has been properly trained to work on energized parts.
 - (2) The qualified person has obtained an approved Energized Electrical Work Permit (Form P-69).
 - (3) The qualified person working on energized parts is wearing the appropriate PPE.
- G. When working within the arc flash boundary, the appropriate PPE shall be used.
 - (1) If the equipment (AC or DC powered) has an NFPA 70E label, the arc flash boundary shall be used based on the label.
 - (2) For AC systems that are 600 volts or less, the arc flash boundary shall be a minimum of 20 feet or the entire room if a boundary of 20 feet cannot be obtained.

10. High Voltage Access

This applies to locations or facilities that have high voltage electrical rooms and enclosures that are more than 600 volts.

- A. Restricted Access
 - (1) Doors to high voltage electrical rooms will be kept locked at all times and access shall be restricted to qualified and authorized personnel.
- B. Enclosure Construction
 - (1) Outdoor installations will be enclosed with a fence that is seven feet high or six feet high with three strands of barbed wire on top. Access to the fenced enclosure will be controlled by a lock and key. For voltages of 601 to 13,799 volts, the minimum distance to live parts is ten feet. For voltages up to 230,000 volts, the minimum distance to live parts is 15 feet.
 - (2) In indoor installations, all high voltage equipment will be enclosed in metal cabinets inside locked fire resistant rooms. The rooms will have a minimum fire rating of three hours.
- C. Separation from Low Voltage Equipment
 - (1) Where low voltage equipment such as switches, cutouts or lighting panels are in rooms where there are exposed high voltage parts, the low voltage parts shall be separated by a panel, fence, or screen.

11. Labeling

- A. Electrical equipment such as switchboards, panel boards, industrial control panels, meter socket enclosures and motor control centers that are likely to require examination, adjustment, servicing, or maintenance while energized shall be marked with a label containing all the following information:

Warning
Arc Flash Hazard

- (1) Nominal system voltage
 - (2) Arc flash boundary
 - (3) At least one of the following:
 - a. Available incident energy and the corresponding working distance, or the arc flash PPE category, BUT NOT BOTH.
 - b. Minimum arc rating of clothing.
 - c. Site specific level of PPE.
 - (4) Labels applied prior to September 30, 2011 are acceptable if they contain the available incident energy or required level of PPE.
- B. Any electrical equipment owned by PennDOT shall:
- (1) Maintain documentation of the method of calculation and the data to support the information for the label.
 - (2) Be reviewed for accuracy at intervals that do not exceed five years.
 - a. If the review of data shows a change or signifies the information on the label is inaccurate the label shall be updated.

12. Safe Electrical Work Practices- Electrical Tools and Extension Cords

- A. Inspect tools and extension cords before each use. Damaged or defective tools and extension cords shall be removed from service in accordance with Protocol 17 - Hand and Power Tools.
- B. Use tools that are properly grounded using a three-prong plug or are double insulated.
- C. Ensure tools are in the off position before connecting to power supply.
- D. Disconnect from power supply before making adjustments or changing accessories.
- E. Pull the plug to disconnect, not the cord.
- F. Keep cords away from heat, sharp edges or moving parts.
- G. Use a ground fault circuit interrupter in wet or damp conditions.
- H. Use only approved extension cords with the proper gauge size. Extension cords are meant for temporary use. Do not use extension cords in place of permanent wiring.
- I. Extension cords that create tripping hazards shall be visually identified by an object or signage to alert employees of the potential hazard.

13. Training

- A. Qualified Persons (Electricians), at a minimum shall hold certifications, training, and work experience such as:
 - (1) The skills and techniques necessary to distinguish exposed energized parts from other parts of electric equipment.
 - (2) The skills and techniques necessary to determine the nominal voltage of exposed energized parts.
 - (3) The approach distances and the corresponding voltages to which the qualified person will be exposed.
 - (4) The decision making process necessary to determine the degree and extent of the hazard and the personal protective equipment and job planning necessary to perform the task safely.
 - (5) Periodicity of training is dependent on the level of hazard.
- B. Employees (Non-Qualified) shall be trained on the following pertaining to their respective duties:
 - (1) Safety-related work practices.
 - (2) Safety procedures including emergency procedure.
- C. Refresher training for non-qualified employees:
 - (1) Refresher training content shall be the same as outlined in initial training. Refresher training will be required under the following circumstances:
 - a. When changes in the workplace render previous training obsolete.
 - b. When changes in the types of safeguards used render previous training obsolete.
 - c. When inadequacies in an affected employee's knowledge indicate that the employee has not retained the requisite understanding or skill.

14. Program Review

The effectiveness of this protocol in preventing workplace hazards, injuries and illnesses will be evaluated annually by the Employee Safety and Training Division with the appropriate actions taken to address protocol deficiencies found.

15. Recordkeeping

Written training records for each employee detailing training received and the date received will be kept on file for the employee's duration of employment at the county or district level.

The Bureau of Office Services, Facilities Management Division shall keep the completed hazard assessments on file for the service life or until the machinery, vehicle, equipment, or electrical component is discontinued from service.

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Health and Safety (MESH) is identified as "original."

Section	Topic
1-15	Original based on AIPP requirements for protocols

Appendix A**Approach Boundaries**

When working on electrical systems the following requirements from NFPA 70 table 130.4 (E)(a) and 130.4 (E)(b) will be adhered to for work conditions.

Nominal System Voltage Range	Limited Approach Boundary		Restricted Approach Boundary
	Exposed movable conductor*	Exposed Fixed circuit part	
Less than 50	Not Specified	Not Specified	Not Specified
50 V to 150 V*	10 ft 0 in	3 ft 6 in	Avoid Contact
151 V to 750 V	10 ft 0 in	3 ft 6 in	1 ft 0 in
751 V to 15 kV	10 ft 0 in	5 ft 0 in	2 ft 2 in
15.1 kV to 36 kV	10 ft 0 in	6 ft 0 in	2 ft 9 in
36.1 kV to 46 kV	10 ft 0 in	8 ft 0 in	2 ft 9 in
46.1 kV to 72.5 kV	10 ft 0 in	8 ft 0 in	3 ft 6 in
72.6 kV to 121 kV	10 ft 8 in	8 ft 0 in	3 ft 6 in
138 kV to 145 kV	11 ft 0 in	10 ft 0 in	3 ft 10 in
161 kV to 169 kV	11 ft 8 in	11 ft 8 in	4 ft 3 in
230 kV to 242 kV	13 ft 0 in	13 ft 0 in	5 ft 8 in
345 kV to 362 kV	15 ft 4 in	15 ft 4 in	9 ft 2 in
500 kV to 550 kV	19 ft 0 in	19 ft 0 in	11 ft 8 in
765 kV to 800 kV	23 ft 9 in	23 ft 9 in	15 ft 11 in

Nominal System Voltage Range	Limited Approach Boundary		Restricted Approach Boundary
	Exposed movable conductor*	Exposed Fixed circuit part	
Less than 50	Not Specified	Not Specified	Not Specified
50 V to 300 V*	10 ft 0 in	3 ft 6 in	Avoid Contact
301 V to 1 kV	10 ft 0 in	3 ft 6 in	1 ft 0 in
1.1 kV to 5 kV	10 ft 0 in	5 ft 0 in	1 ft 5 in
5k V to 15 kV	10 ft 0 in	5 ft 0 in	2 ft 2 in
15.1 kV to 45 kV	10 ft 0 in	8 ft 0 in	2 ft 9 in
45.1 kV to 75 kV	10 ft 0 in	8 ft 0 in	3 ft 6 in
75.1 kV to 150 kV	10 ft 8 in	10 ft 0 in	3 ft 10 in
150.1 kV to 250 kV	11 ft 8 in	11 ft 8 in	5 ft 3 in
250.1 kV to 500 kV	20 ft 0 in	20 ft 0 in	11 ft 6 in
500.1 kV to 800 kV	26 ft 0 in	26 ft 0 in	16 ft 5 in

NOTE: All dimensions are distance from exposed energized conductors or circuit parts to worker.

*Exposed moveable conductor describes a condition in which the distance between the conductor and a person is not under control of the person. The term is normally applied to overhead line conductors supported by poles. This includes circuits where the exposure does not exceed 120 volts nominal.

Appendix B

Personal Protective Equipment Category Requirements NFPA 130.7 (C)(15)(c)

ARC - FLASH PPE Category	Personal Protective Equipment (PPE)	
<p style="text-align: center; font-size: 2em;">1</p>	<p>Arc Rated Clothing, Minimum Arc Rating of 4 cal/cm²</p> <ul style="list-style-type: none"> • Arc rated long sleeve shirt and pants or Arc rated coveralls • Arc rated face shield¹ or arc flash suit hood • Arc rated jacket, parka, rainwear, or hard hat liner (AN)⁵ 	<p>Protective Equipment</p> <ul style="list-style-type: none"> • Hard hat • Safety glasses or safety goggles (SR) • Hearing protection (ear canal inserts)² • Heavy duty leather gloves, arc rated gloves or rubber insulating gloves with protectors (SR)³ • Leather footwear (AN)⁴
<p style="text-align: center; font-size: 2em;">2</p>	<p>Arc Rated Clothing, Minimum Arc Rating of 8 cal/cm²</p> <ul style="list-style-type: none"> • Arc rated long sleeve shirt and pants or arc rated coveralls • Arc rated flash suit hood or arc rated face shield¹ AND arc rated balaclava • Arc rated jacket, parka, rainwear, or hard hat liner (AN)⁵ 	<p>Protective Equipment</p> <ul style="list-style-type: none"> • Hard hat • Safety glasses or safety goggles (SR) • Hearing protection (ear canal inserts)² • Heavy duty leather gloves, arc rated gloves or rubber insulating gloves with protectors (SR)³ • Leather footwear⁴
<p style="text-align: center; font-size: 2em;">3</p>	<p>Arc Rated Clothing Selected So That the System Arc Rating Meets the Required Minimum Arc Rating of 25 cal/cm²</p> <ul style="list-style-type: none"> • Arc rated long sleeve shirt (AR) • Arc rated pants (AR) • Arc rated coverall (AR) • Arc rated arc flash suit jacket (AR) • Arc rated arc flash suit pants (AR) • Arc rated arc flash suit hood • Arc rated gloves or rubber insulating gloves and protectors (SR)³ • Arc rated jacket, parka, rainwear, or hard hat liner (AN)⁵ 	<p>Protective Equipment</p> <ul style="list-style-type: none"> • Hard hat • Safety glasses or safety goggles (SR) • Hearing protection (ear canal inserts)² • Leather footwear⁴
<p style="text-align: center; font-size: 2em;">4</p>	<p>Arc Rated Clothing Selected So That the System Arc Rating Meets the Required Minimum Arc Rating of 40 cal/cm²</p> <ul style="list-style-type: none"> • Arc rated long sleeve shirt (AR) • Arc rated pants (AR) • Arc rated coverall (AR) • Arc rated arc flash suit jacket (AR) • Arc rated arc flash suit pants (AR) • Arc rated arc flash suit hood • Arc rated gloves or rubber insulating gloves and protectors (SR)³ • Arc rated jacket, parka, rainwear, or hard hat liner (AN)⁵ 	<p>Protective Equipment</p> <ul style="list-style-type: none"> • Hard hat • Safety glasses or safety goggles (SR) • Hearing protection (ear canal inserts)² • Leather footwear⁴

NOTE: Personal Protective Equipment comes from NFPA 130.7 (C)(15)(c).

AN – As needed (Optional)

AR – As required

SR – Selection required

- ¹ Face shields are to have wrap around guarding to protect not only the face but also the forehead, ears, and neck, or alternatively, an arc rated arc flash suit hood is required to be worn.
- ² Other types of hearing protection are permitted to be used in lieu of or in addition to ear canal inserts provided they are worn under an arc rated arc flash suit hood.
- ³ Rubber insulating gloves with leather protectors provide arc flash protection in addition to shock protection. Higher class rubber insulating gloves with leather protectors, due to their increased material thickness, provide increased arc flash protection.
- ⁴ Footwear other than leather or dielectric shall be permitted to be used provided it has been tested to demonstrate no ignition, melting or dripping at the minimum arc rating for the respective arc flash PPE category.
- ⁵ The arc rating of outer layers worn over arc rated clothing as protection from the elements or for other safety purposes, and that are not used as part of a layered system, shall not be required to be equal to or greater than the estimated incident energy exposure.

Appendix C

Arc Flash PPE Categories for Alternating Current (AC) Systems

Equipment	ARC - FLASH PPE Category	ARC - FLASH Boundary
Panelboards or other equipment rated 240 V and below Maximum of 25 kA available fault current; maximum of 0.03 sec (2 cycles) fault clearing time; minimum working distance 18 in.	1	19 in.
Panelboards or other equipment rated greater than 240 V and up to 600 V Maximum of 25 kA available fault current; maximum of 0.03 sec (2 cycles) fault clearing time; minimum working distance 18 in.	2	3 ft.
600 volt class motor control centers (MCCs) Maximum of 65 kA available fault current; maximum of 0.03 sec (2 cycles) fault clearing time; minimum working distance 18 in.	2	5 ft.
600 volt class motor control centers (MCCs) Maximum of 42 kA available fault current; maximum of 0.33 sec (20 cycles) fault clearing time; minimum working distance 18 in.	4	14 ft.
600 volt class switchgear (with power circuit fuses or fused switches) and 600-volt class switchboards Maximum of 35 kA available fault current; maximum of up to 0.5 sec (30 cycles) fault clearing time; minimum working distance 18 in.	4	20 ft.
Other 600 volt class equipment (277 volts through 600 volts nominal) Maximum of 65 kA available fault current; maximum of 0.03 sec (2 cycles) fault clearing time; minimum working distance 18 in.	2	5 ft.
NEMA E2 (fused contactor) motor starters, 2.3 kV through 7.2 kV Maximum of 35 kA available fault current; maximum of up to 0.24 sec (15 cycles) fault clearing time; minimum working distance 36 in.	4	40 ft.
Metal claw switchgear, 1 kV through 15 kV Maximum of 35 kA available fault current; maximum of up to 0.24 sec (15 cycles) fault clearing time; minimum working distance 36 in.	4	40 ft.
Metal enclosed interrupter switchgear, fused or unfused type construction, 1 kV through 15 kV Maximum of 35 kA available fault current; maximum of up to 0.24 sec (15 cycles) fault clearing time; minimum working distance 36 in.	4	40 ft.
Other equipment 1 kV through 15 kV Maximum of 35 kA available fault current; maximum of up to 0.24 sec (15 cycles) fault clearing time; minimum working distance 36 in.	4	40 ft.
Arc resistance equipment up to 600-volt class 1 DOORS CLOSED and SECURED; with an available fault current and a fault clearing time that does not exceed the arc resistant rating of the equipment*	N/A	N/A
Arc resistance equipment 1 kV through 15 kV DOORS CLOSED and SECURED; with an available fault current and a fault clearing time that does not exceed the arc resistant rating of the equipment*	N/A	N/A

NOTE: For equipment rated 600 volts and below and protected by upstream current-limiting fuses or current-limiting molded case circuit breakers sized at 200 amperes or less, the arc flash PPE category can be reduced by one number but not below arc flash PPE category 1. Arc Flash PPE Categories for Alternating Current (AC) Systems comes from NFPA 130.7 (C)(15)(a).

* For DOORS OPEN refer to the corresponding non-arc resistant section of this table.

Appendix D**Arc Flash PPE Categories for Direct Current (DC) Systems**

Equipment	ARC - FLASH PPE Category	ARC - FLASH Boundary
Storage batteries, DC switchboards, and other DC supply sources Parameters: Greater than or equal to 100 volts and less than or equal to 250 volts Maximum arc duration and minimum working distance: 2 sec @ 455 mm (18 in.)		
Available fault current less than 4 kA	2	900 mm (3 ft.)
Available fault current greater than or equal to 4 kA and less than 7 kA	2	1.2 m (4 ft.)
Available fault current greater than or equal to 7kA and less than 15kA	3	1.8 m (6 ft.)
Storage batteries,DC switchboards, and other DC supply sources Parameters: Greater than 250 volts and less than or equal to 600 volts Maximum arc duration and minimum working distance: 2 sec @ 455 mm (18 in.)		
Available fault current less than 1.5 kA	2	900 mm (3 ft.)
Available fault current greater than or equal to 1.5 kA and less than 3 kA	2	1.2 m (4 ft.)
Available fault current greater than or equal to 3 kA and less than 7 kA	3	1.8 m (6 ft.)
Available fault current greater than or equal to 7kA and less than 10 kA	4	2.5 m (8 ft.)

- NOTE: 1. Apparel that can be expected to be exposed to electricity must meet both of the following conditions:
- a. Be evaluated for electrolytic protection
 - b. Be arc rated
2. A two second arc duration is assumed if there is no overcurrent protective device (OCPD) or if the fault clearing time is not known. If the fault clearing time is known and is less than two seconds, an incident energy analysis could provide a more representative result.

Protocol 2 - Personal Protective Equipment

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This protocol addresses the selection, purchase, policies, training, and enforcement regarding the proper use of personal protective equipment (PPE) and safety apparel deemed necessary to protect employees from hazards in the work environment. PennDOT recognizes that engineering and administrative controls are the preferred methods for addressing hazards. PPE is provided when such controls do not effectively eliminate the hazards. All PPE must be Employee Safety and Training Division approved.

1. Responsibilities

- A. All employees
 - (1) The proper use of required PPE and work attire is considered a condition of employment.
 - (2) Employees are responsible for the care, maintenance, inspection, and proper donning and doffing of all PPE, as directed by the manufacturer, current policy, and their supervisor or manager.
- B. Supervisors are responsible for ensuring that all employees under their supervision have and use the proper PPE, work attire, and training on usage.
- C. Managers are responsible for ensuring that all required and appropriate PPE is provided by PennDOT, and available to all employees as needed, and as described in this protocol.

2. Work Attire

All employees engaged in or entering any field operation involving maintenance, construction, design, surveying, inspections, etc. (on or off state right-of-way) must dress appropriately for the climatic conditions and temperatures in which they must work. Proper work attire is required and considered a condition of employment.

A. Requirements:

- (1) Shirts with unaltered sleeves that are six inches or longer from the seam. See through clothing is prohibited.
- (2) Full length trousers. Sweatpants and capris are prohibited.
- (3) Work shoes must be of above the ankle design and have good tread to help prevent slips, trips and falls. Athletic footwear, such as sneakers and tennis shoes, are prohibited.

B. Recommendations:

- (1) Light weight, light colored, cotton or cotton blend shirts when working in intense sun and extreme heat.
- (2) When working in severe cold, wind, rain, sleet, or snow:
 - a. Dress in layers.
 - b. Wear wool or wool blend clothing.
 - c. Wear a skull cap, gloves, and glove liners.

3. High Visibility Apparel

All employees engaged in or entering any field operation involving maintenance, construction, design, surveying, inspections, etc. (on or off state right-of-way) or exposed to moving vehicles and equipment are required to wear high visibility vests, t-shirts, sweatshirts, raincoats or jackets which meet the ANSI Class 2 or 3 safety garment requirements based on the following criteria. This personal protective safety clothing is intended to provide conspicuity for both daytime and nighttime use.

A. High Visibility Vests

- (1) All employees, including management and temporary, engaged in or entering into any field operation involving maintenance, construction, design, surveying, inspections, etc. (on or off state right-of-way) or exposed to moving vehicles and equipment must be issued vests.
- (2) The vest must be worn over at least a shirt with long or short sleeves.
- (3) The multicolor high visibility yellow vest with orange stripes and gray reflective trim.
- (4) All maintenance field employees must wear the multicolor vests. The only exception to this is while employees are operating or transporting equipment within an enclosed cab, the vest must be redonned prior to leaving the cab. Employees operating or transporting in equipment without an enclosed cab are not exempt.
- (5) While conducting construction or safety-related site visits at transit systems and freight-related carriers, employees from the Bureau of Public Transportation and the Bureau of Rail Freight, Ports and Waterways must wear at least an ANSI Class 2 garment. That garment must be PennDOT issued, but color requirements may vary based on the requirements of the transit system that owns the site.
- (6) Organizations must purchase the ANSI Class 2 multicolor vest from UniqueSource through the local purchasing agent. The existing single color, high visibility yellow vest can no longer be purchased.

- B. Employees performing flagging duties and flagging instructors shall wear the following:
- (1) ANSI Performance Class 3 Multicolor, High Visibility Yellow-Green Vest* with orange stripes and gray reflective trim. The single color high visibility yellow reflective raincoat** may be worn instead of this garment only during inclement weather.
 - (2) ANSI Class E Chaps* (yellow-green or red-orange). The single color high visibility yellow reflective rain bib overalls may be worn instead of this garment only during inclement weather. Leggings are not acceptable.
* The vest and chaps must be purchased from UniqueSource.
** The rain wear must be purchased from Pennsylvania Correctional Industries (PCI).
- C. During nighttime operations, all employees must wear ANSI Class 3 garments while exposed to moving vehicles and/or equipment.
- NOTE: ANSI Class E reflective leggings or chaps worn in combination with the ANSI Class 2 garment meet ANSI Class 3 requirements.
- D. T-shirts/Sweatshirts
- (1) All union covered rank and file, permanent maintenance, construction, survey and bridge inspection personnel who are assigned continuous field duty, including union covered first level supervisors, will be provided PennDOT issued ANSI Class 2 t-shirts and ANSI Class 3 sweatshirts. One ANSI Class 2 t-shirt and one ANSI Class 3 sweatshirt should be issued while the employee is in temporary classification.
 - (2) Management and employees performing clerical and/or administrative duties are not eligible to receive these t-shirts and sweatshirts. Employees such as mechanics who are issued uniforms must not be issued t-shirts and sweatshirts. Management and summer intern employees will be provided with PennDOT issued vests only.
 - (3) Eligible employees must be given the opportunity to order up to five t-shirts for the spring of even numbered years and one sweatshirt for the fall of even numbered years to be purchased by PennDOT. This process will repeat every two years. T-shirts and a sweatshirt may also be ordered for eligible new employees upon hire. Organizations must purchase the t-shirts and sweatshirts from PIBH.
 - (4) The ANSI class of the garment is based on its design when purchased. These garments must not be modified in any way. Modified garments will be considered noncompliant. T-shirts and sweatshirts will not be replaced by the employer due to fading, wear and/or tear, therefore a vest must be worn when the t-shirt or sweatshirt is deemed noncompliant by a supervisor or management.
 - (5) Beyond the PennDOT allotment, permanent and temporary employees will be allowed to purchase their own t-shirts and sweatshirts directly from UniqueSource only. For t-shirts, there is a minimum of 12 shirts per order and orders less than four dozen (48) shirts will have freight added. For sweatshirts, there is no minimum number to order or additional freight. Organizations cannot assign this additional ordering to an employee as a work duty. Employees who want to go together to order must make arrangements during nonwork hours. Employees can order from UniqueSource by calling 1-800-447-8860 or visiting www.uniquesource.com.
 - (6) High Visibility Leggings/Chaps: PennDOT provided ANSI Class E high visibility leggings/chaps are optional for daylight operations. Supervisors may require leggings or chaps anytime they determine additional visibility would enhance safety. Organizations must purchase the high visibility leggings or chaps from UniqueSource through the local purchasing agent.
- E. Rainwear
- (1) All employees engaged in or entering any field operation involving maintenance, construction, design, surveying, inspections, etc. (on or off state right-of-way) or exposed to moving vehicles and equipment are eligible to wear rainwear.
 - (2) In lieu of wearing a vest, t-shirt, sweatshirt or jacket, rainwear can be worn during inclement weather.

- (3) If rain pants are not worn with the raincoat during inclement weather, all employees exposed to moving vehicles and equipment during nighttime operations will be required to wear high visibility/reflective leggings or chaps in combination with the raincoat.
- (4) The rain coat meets or exceeds ANSI Class 3 specifications and the rain pants meet or exceed ANSI Class E specifications.
- (5) Organizations must purchase the high visibility reflective rainwear from Pennsylvania Correctional Industries (PCI) through the local purchasing agent.

F. High Visibility Jackets

- (1) High visibility yellow jackets meeting ANSI Class 2 or 3 standards will be considered acceptable safety attire and can be purchased and worn by the employee.
- (2) PennDOT will not purchase jackets for employees.
- (3) The jackets must contain a label/tag to show that the jackets are either ANSI Class 2 or 3 compliant.
- (4) Employees will be allowed to purchase the high visibility jackets from any store.

G. Purchasing Information

The garments in this section are vendor exclusive items. There is no logo on these garments.

(1) High Visibility Vests

These garments must be purchased from UniqueSource.
(SAP/SRM contract number: 4400004306)

a. ANSI Class 2 – Original

All these vests meet or exceed the American National Standard ANSI/ISEA 107-2020 specification for Class 2 high visibility safety apparel. Mesh (MSH) vests are made of 3.4 oz. per square yard yellow-green soft mesh fluorescent polyester material with Reflexite 2" silver reflective trim edged on each side with ½" soft polyester ribbon fabric trim in fluorescent orange around the chest, waist and over each shoulder. Open front, Velcro closures and reflective Velcro side adjustments.

Product SKU	Material Master	Short Text Description	Product Category
18769350	320840	VEST SFTY MSH 2" SLVR TRM PDR YGR REG	46181507
18769351	320841	VEST SFTY MSH 2" SLVR TRM PDR YGR L	46181507
18769352	320842	VEST SFTY MSH 2" SLVR TRM PDR YGR XL	46181507
18769353	320843	VEST SFTY MSH 2" SLVR TRM PDR YGR 2XL	46181507
20093430	346008	VEST SFTY MSH CLASS 2 PDR YGR 3XL	46181507
20093431	346009	VEST SFTY MSH CLASS 2 PDR YGR 4XL	46181507
20477731	346368	VEST SFTY MSH CLASS 2 PDR YGR 5XL	46181507
20477732	346369	VEST SFTY MSH CLASS 2 PDR YGR 6XL	46181507
20477733	346370	VEST SFTY MSH CLASS 2 PDR YGR 7XL	46181507
20477734	346371	VEST SFTY MSH CLASS 2 PDR YGR 8XL	46181507

b. ANSI Class 2 – Original with Pockets (PCKT)

The original can be ordered with two 7” deep pockets full width on the inside of the front panels with closures to protect contents.

Product SKU	Material Master	Short Text Description	Product Category
18769354	320844	VEST SFTY MSH PCKT 2" SLVR TRM PDR YGR REG	46181507
18769355	320845	VEST SFTY MSH PCKT 2" SLVR TRM PDR YGR L	46181507
18769356	320846	VEST SFTY MSH PCKT 2" SLVR TRM PDR YGR XL	46181507
18769357	320847	VEST SFTY MSH PCKT 2" SLVR TRM PDR YGR 2XL	46181507
20093432	346010	VEST SFTY MSH CLASS 2 PCKT PDR YGR 3X	46181507
20093433	346011	VEST SFTY MSH CLASS 2 PCKT PDR YGR 4X	46181507
20477735	346464	VEST SFTY MSH CLASS 2 PCKT PDR YGR 5XL	46181507
20477736	346465	VEST SFTY MSH CLASS 2 PCKT PDR YGR 6XL	46181507
20477737	346466	VEST SFTY MSH CLASS 2 PCKT PDR YGR 7XL	46181507
20477738	346467	VEST SFTY MSH CLASS 2 PCKT PDR YGR 8XL	46181507

c. ANSI Class 2 – Tear Away

Tear away models have smaller Velcro tabs at front closures and side adjustments, and additional Velcro closures over the shoulders to facilitate “tear away” should the vest get caught by moving parts.

Product SKU	Material Master	Short Text Description	Product Category
18769359	320858	VEST SFTY TEARAWAY MSH PDR YGR REG	46181507
18769360	320859	VEST SFTY TEARAWAY MSH PDR YGR L	46181507
18769361	320860	VEST SFTY TEARAWAY MSH PDR YGR XL	46181507
18769362	320861	VEST SFTY TEARAWAY MSH PDR YGR 2XL	46181507
20093435	346012	VEST SFTY MSH TA CLASS 2 PDR YGR 3X	46181507
20093436	346013	VEST SFTY MSH TA CLASS 2 PDR YGR 4X	46181507
20477739	346372	VEST SFTY MSH TA CLASS 2 PDR YGR 5XL	46181507
20477740	346373	VEST SFTY MSH TA CLASS 2 PDR YGR 6XL	46181507
20477741	346374	VEST SFTY MSH TA CLASS 2 PDR YGR 7XL	46181507
20477742	346375	VEST SFTY MSH TA CLASS 2 PDR YGR 8XL	46181507

d. ANSI Class 2 – Tear Away with Pockets (PCKT)

Tear away models have smaller Velcro tabs at front closures and side adjustments, and additional Velcro closures over the shoulders to facilitate “tear away” should the vest get caught by moving parts. This vest also includes internal pockets.

Product SKU	Material Master	Short Text Description	Product Category
18769363	320862	VEST SFTY TEARAWAY MSH PCKT PDR YGR REG	46282507
18769364	320863	VEST SFTY TEARAWAY MSH PCKT PDR YGR L	46282507
18769365	320864	VEST SFTY TEARAWAY MSH PCKT PDR YGR XL	46282507
18769366	320865	VEST SFTY TEARAWAY MSH PCKT PDR YGR 2XL	46282507
20093437	346014	VEST SFTY MSH TA CLASS 2 PCKT PDR YGR 3X	46282507
20093438	346015	VEST SFTY MSH TA CLASS 2 PCKT PDR YGR 4X	46282507

e. ANSI Class 2 – Surveyor

Vests can be worn by Surveyors and Bridge Inspectors only. Surveyor models are made of 3.65 oz. per square yard yellow-green soft solid fluorescent polyester material. Vest has 1” x 3” webbing on right shoulder for phone, three grommets for ties, two 7” deep pockets full width on the outside of the front panels (one 6” x 6” pocket on the right breast and a 6” x 6” three segmented pocket on the left breast), and four inside pockets (two 14” x 6” and two 6 ½” x 6”).

Product SKU	Material Master	Short Text Description	Product Category
18769368	320866	VEST SFTY SURVEYOR SLD PCKTS PDR YGR REG	46181507
18769369	320867	VEST SFTY SURVEYOR SLD PCKTS PDR YGR L	46181507
18369370	320868	VEST SFTY SURVEYOR SLD PCKTS PDR YGR XL	46181507
18769371	320869	VEST SFTY SURVEYOR SLD PCKTS PDR YGR 2XL	46181507
20477725	346468	VEST SFTY SURVEYOR SLD PCKTS PDR YGR 3XL	46181507
20477726	346469	VEST SFTY SURVEYOR SLD PCKTS PDR YGR 4XL	46181507
20477727	346470	VEST SFTY SURVEYOR SLD PCKTS PDR YGR 5XL	46181507
20477728	346471	VEST SFTY SURVEYOR SLD PCKTS PDR YGR 6XL	46181507
20477729	346472	VEST SFTY SURVEYOR SLD PCKTS PDR YGR 7XL	46181507
20477730	346473	VEST SFTY SURVEYOR SLD PCKTS PDR YGR 8XL	46181507

f. ANSI Class 2 – Welding

The Flame Resistant model is made of 6.2 oz. per sq. yd. yellow-green soft mesh fluorescent modacrylic/aramid blend material with Reflexite 2" fluorescent lime, Brilliance Series UFR reflective flame resistant trim edged on each side with ½" soft polyester ribbon fabric trim in fluorescent orange. This model must only be worn for field welding and cutting operations.

Product SKU	Material Master	Short Text Description	Product Category
18769397	340868	VEST SFTY MSH CLASS 2 FR PDR YGR REG	46181507
18769398	340869	VEST SFTY MSH CLASS 2 FR PDR YGR L	46181507
18769399	340871	VEST SFTY MSH CLASS 2 FR PDR YGR XL	46181507
18789481	340872	VEST SFTY MSH CLASS 2 FR PDR YGR 2XL	46181507
20477743	346458	VEST SFTY MSH CLASS 2 FR PDR YGR 3XL	46181507
20477744	346459	VEST SFTY MSH CLASS 2 FR PDR YGR 4XL	46181507
20477745	346460	VEST SFTY MSH CLASS 2 FR PDR YGR 5XL	46181507
20477746	346461	VEST SFTY MSH CLASS 2 FR PDR YGR 6XL	46181507
20477747	346462	VEST SFTY MSH CLASS 2 FR PDR YGR 7XL	46181507
20477748	346463	VEST SFTY MSH CLASS 2 FR PDR YGR 8XL	46181507

g. ANSI Class 3 – Adjustable/Tear Away

Class 3, Tear Away made of 3.4 oz./sq. yd. yellow-green soft mesh fluorescent polyester material with sleeves. Velcro adjustable under arms and down sides for added comfort. Reflexite 2" GP 440 silver reflective trim, edged on each side with soft polyester ribbon fabric trim in fluorescent orange around the chest, waist and over each shoulder and around the sleeves. Open front, hook and loop Velcro closures. This vest has 360-degree reflective visibility. Meets and exceeds the American National Standard ANSI/ISEA 107 2020 specification for Class 3 high visibility safety apparel.

Product SKU	Material Master	Short Text Description	Product Category
19148885	345652	VEST SFTY MSH CLASS 3 TA PDR YGR S	46181507
19148886	345653	VEST SFTY MSH CLASS 3 TA PDR YGR M	46181507
19148887	345654	VEST SFTY MSH CLASS 3 TA PDR YGR L	46181507
19148888	345655	VEST SFTY MSH CLASS 3 TA PDR YGR XL	46181507
19148889	345656	VEST SFTY MSH CLASS 3 TA PDR YGR 2X	46181507
19148890	345657	VEST SFTY MSH CLASS 3 TA PDR YGR 3X	46181507
19148891	345658	VEST SFTY MSH CLASS 3 TA PDR YGR 4X	46181507
19148892	345659	VEST SFTY MSH CLASS 3 TA PDR YGR 5X	46181507
19148893	345660	VEST SFTY MSH CLASS 3 TA PDR YGR 6X	46181507
19148894	345661	VEST SFTY MSH CLASS 3 TA PDR YGR 7X	46181507
19148895	345662	VEST SFTY MSH CLASS 3 TA PDR YGR 8X	46181507

(2) High Visibility Leggings/Chaps – ANSI Class E

These garments are made of 3.4 oz. per square yard soft fluorescent polyester mesh with Reflexite reflective stripes and must be purchased from UniqueSource (SAP/SRM contract number: 4400004306).

- a. The leggings are fully adjustable for a perfect fit with elastic at top and bottom. Three Velcro strips for closing makes the leggings easy to put over clothing and boots. A pair of these, one worn on each leg, meets ANSI/ISEA 107-2020 specifications for Class E high visibility safety apparel. These are only available in yellow-green with two 2-inch silver Reflexite reflective trim edged above and below with ½” soft polyester mesh fabric in red-orange.

Product SKU	Material Master	Short Text Description	Product Category
18769405	327939	LEGGINGS,SFTY,MSH,3.4OZ,PDR,YGR,2"SLVR	46181527

- b. The chaps have a 2” elastic waist that fastens in the front with a side release buckle for full adjustment. Each leg of the chaps is independent and open on the inside of the leg with Velcro closures for ease in putting on over clothing. The regular chap size “fits most.” The XL chap size has longer leg and waist straps, if needed. There are two reflective stripes on each leg, one above and one below the knee. These meet ANSI/ISEA 107-2020 specifications for Class E high visibility safety apparel.
 - I. Fluorescent yellow-green (YGR) background material with 3” yellow-green reflective strips
 - II. Fluorescent red-orange (ORN) background material with 2” silver reflective strips

Product SKU	Material Master	Short Text Description	Product Category
19148898	345648	CHAPS,SFTY,MSH,3.4OZ,ORN,X-S	46181527
19148899	345649	CHAPS,SFTY,MSH,3.4OZ,ORN,S	46181527
19148900	341068	CHAPS,SFTY,MSH,3.4OZ,ORN,REG	46181527
19148901	342049	CHAPS,SFTY,MSH,3.4OZ,ORN,TALL	46181527
19148878	345650	CHAPS,SFTY,MSH,3.4OZ,YGR,X-S	46181527
19148879	345651	CHAPS,SFTY,MSH,3.4OZ,YGR,S	46181527
19148880	297130	CHAPS,SFTY,MSH,3.4OZ,YGR,REG	46181527
19148881	342048	CHAPS,SFTY,MSH,3.4OZ,YGR,TALL	46181527

(3) High Visibility Sweatshirts – ANSI Class 3

These garments must be purchased from UniqueSource (SAP/SRM contract number: 4400004306). They are made of yellow-green fluorescent 100% acrylic material with long sleeves and rib knit cuffs and bottom. With 2" Reflexite silver reflective trim edged on each side with ½" knitted polyester ribbon fabric trim in red orange around the chest, waist, sleeves, and over each shoulder, these garments meet or exceed the American National Standard ANSI/ISEA 107-2020 specification for Class III high visibility safety apparel.

Product SKU	Material Master	Short Text Description	Product Category
18769279	322781	SWEATSHIRT,ZPR,HD,CLSIII,YGR,S	46181500
18769280	322782	SWEATSHIRT,ZPR,HD,CLSIII,YGR,M	46181500
18769281	322783	SWEATSHIRT,ZPR,HD,CLSIII,YGR,L	46181500
18769282	322784	SWEATSHIRT,ZPR,HD,CLSIII,YGR,XL	46181500
18769283	322785	SWEATSHIRT,ZPR,HD,CLSIII,YGR,2XL	46181500
18769284	322786	SWEATSHIRT,ZPR,HD,CLSIII,YGR,3XL	46181500
18769285	322787	SWEATSHIRT,ZPR,HD,CLSIII,YGR,4XL	46181500
18769286	322788	SWEATSHIRT,ZPR,HD,CLSIII,YGR,5XL	46181500
18769287	322789	SWEATSHIRT,ZPR,HD,CLSIII,YGR,6XL	46181500

(4) High Visibility T-Shirts – ANSI Class 2

T-Shirts must be purchased from UniqueSource (SAP/SRM contract number: 4400004306). These garments are made of yellow-green 5.6 oz. crew neck cotton polyester shirt with 6" sleeves. With 2" breathable segmented reflective trim around the waist and over each shoulder for high visibility and comfort, they meet or exceed the American National Standard ANSI/ISEA 107-2020 specification for Class II high visibility safety apparel. Tall sizes have additional length for a longer torso. (There is a minimum of 12 shirts per order and orders for less than four dozen shirts will have freight added.)

Product SKU	Material Master	Short Text Description	Product Category
18768855	322728	TSHIRT,CREW,CLS II,YGR,S	46181500
18768856	322729	TSHIRT,CREW,CLS II,YGR,M	46181500
18768857	322730	TSHIRT,CREW,CLS II,YGR,L	46181500
18768858	322731	TSHIRT,CREW,CLS II,YGR,XL	46181500
18768859	322732	TSHIRT,CREW,CLS II,YGR,2XL	46181500
18768860	322733	TSHIRT,CREW,CLS II,YGR,3XL	46181500
18768861	322734	TSHIRT,CREW,CLS II,YGR,4XL	46181500
18768862	323218	TSHIRT,CREW,CLS II,YGR,5XL	46181500
18788002	322735	TSHIRT,CREW,CLS II,YGR,TALL,S	46181500
18788003	322736	TSHIRT,CREW,CLS II,YGR,TALL,M	46181500
18788004	322737	TSHIRT,CREW,CLS II,YGR,TALL,L	46181500
18788005	322738	TSHIRT,CREW,CLS II,YGR,TALL,XL	46181500
18788006	322740	TSHIRT,CREW,CLS II,YGR,TALL,2XL	46181500
18788007	322741	TSHIRT,CREW,CLS II,YGR,TALL,3XL	46181500
18788008	322742	TSHIRT,CREW,CLS II,YGR,TALL,4XL	46181500
18788009	323219	TSHIRT,CREW,CLS II,YGR,TALL,5XL	46181500

(5) Rain Jackets and Overalls

These fluorescent yellow-green water repellent hooded jackets and bib overalls, made of a 10 oz. combination PVC on polyester, are ANSI compliant. The rain jackets feature a zipper/snap fly front with snap take ups, patch pockets, and 3M reflective tape on the jacket arms. The snap front bib overalls come with snap take ups, suspender hardware, and 3M reflective tape on the legs. These must be purchased from Pennsylvania Correctional Industries (PCI).

Material Master	SAP Short Text
295720	OVERALLS BIB RAIN PRF YEL GRN XS
295721	OVERALLS BIB RAIN PRF YEL GRN S
295722	OVERALLS BIB RAIN PRF YEL GRN M
295723	OVERALLS BIB RAIN PRF YEL GRN L
295724	OVERALLS BIB RAIN PRF YEL GRN XL
295725	OVERALLS BIB RAIN PRF YEL GRN 2XL
295726	OVERALLS BIB RAIN PRF YEL GRN 3XL
295727	OVERALLS BIB RAIN PRF YEL GRN 4XL
295728	OVERALLS BIB RAIN PRF YEL GRN 5XL
295690	JACKET RAIN PVC PLY PCKTS HOOD YEL GRN XS
295691	JACKET RAIN PVC PLY PCKTS HOOD YEL GRN S
295692	JACKET RAIN PVC PLY PCKTS HOOD YEL GRN M
295693	JACKET RAIN PVC PLY PCKTS HOOD YEL GRN L
295694	JACKET RAIN PVC PLY PCKTS HOOD YELGRN XL
295695	JACKET RAIN PVC PLY PCKTS HOOD YELGRN 3X
295696	JACKET RAIN PVCPLY PCKTS HOOD YELGRN 2XL
295697	JACKET RAIN PVCPLY PCKTS HOOD YELGRN 4XL
295698	JACKET RAIN PVCPLY PCKTS HOOD YELGRN 5XL

(6) Supervisor Coat (Trench Style Rainwear)

These $\frac{3}{4}$ length, fluorescent yellow-green water repellent hooded trench style raincoats, made of a 10 oz. combination PVC on polyester, are ANSI compliant. The raincoats feature a zipper/snap fly front with snap take ups, patch pockets, and 3M reflective tape on the arms.

Material Master	SAP Short Text
319139	COAT RAIN PVC PCKTS HOOD YEL GRN XS
319320	COAT RAIN PVC PCKTS HOOD YEL GRN S
319321	COAT RAIN PVC PCKTS HOOD YEL GRN M
319322	COAT RAIN PVC PCKTS HOOD YEL GRN L
319323	COAT RAIN PVC PCKTS HOOD YEL GRN XL
319324	COAT RAIN PVC PCKTS HOOD YEL GRN 2XL
319325	COAT RAIN PVC PCKTS HOOD YEL GRN 3XL
319326	COAT RAIN PVC PCKTS HOOD YEL GRN 4XL
319327	COAT RAIN PVC PCKTS HOOD YEL GRN 5XL

4. Head Protection

- A. All employees must wear a hard hat when one or more of the following criteria applies:
- (1) When engaged in or entering any field operation involving maintenance, construction, design, surveying, inspections, etc. (on or off state right-of-way).
 - (2) When there is a clear and present danger of falling objects.
 - (3) When exposed to falling or flying material.
 - (4) When exposed to overhead electrical conductors.
 - (5) At the direction of a supervisor/foreman.

NOTE: Although hard hats are required for the above described circumstances, there may be a need to perform a certain task (e.g., using telescopic lenses, climbing under vehicle for repairs, etc.), which may require the employee to temporarily remove the hard hat to accomplish the task. The hard hat must be replaced when the task is completed.

- B. Exemptions for wearing hard hats:
- (1) At PennDOT facilities to include stockpiles, garages and yards unless engaged in or entering an operation where danger exists as described above.
 - (2) While operating equipment with an enclosed cab or overhead impact protection.
- C. Bump caps are optional in any area where hard hats are not required. Under no circumstances may a bump cap be substituted for a hard hat.
- D. Climbing style hard hats will be allowed as a secondary option for district bridge inspection crews, tunnel employees and tree felling chain saw operators only.
- (1) Climbing style hard hats are authorized for specialized bridge inspection work, tree felling work (chain saw operators), and tunnel work that involve tight or confined work areas that make this a better option for head protection. All other requests for the use for the climbing style hard hats as a secondary option must be reviewed and approved by the ADE-M on a case by case basis. The presenting manager must provide clear evidence that the secondary option is a safer alternative as it pertains to the work activity identified.
 - (2) The climbing style hard hats will not replace the V-Gard Protective Cap with brim or the V-Gard Safari style hard hat. It shall only be provided as a secondary option during specialized tree felling activities (chain saw operators), bridge inspection and tunnel work.
 - (3) The climbing style hard hat will not be worn for standard roadside work or during flagging operations.
- E. Hard hats and the bump caps must be purchased from UniqueSource through the local purchasing agent.
- F. Specifications
- (1) Hard hats consist of two components: the helmet and the adjustable suspension. All PennDOT issued hard hats meet ANSI/ISEA Z89.1 Type 1, Class E requirements.
- G. Styles and Sizes
- (1) The V-Gard® Protective Cap with a brim at the front is available in three sizes (listed below).
 - a. Small (fits sizes 6-7½)
 - b. Medium (fits sizes 6½-8)
 - c. Large (fits sizes 7-8½)
 - (2) The V-Gard® Protective Hat with a full (safari) brim that extends all the way around the hat is only available in one size: Medium (fits sizes 6½ to 8).
 - (3) The sizes of the suspension and helmet must match.

- (4) The Milwaukee ANSI/ISEA Z89.1-2014 Classification Type 2, Class E, climbing style hard hats.
 - a. The sizes of the suspension and helmet must match.
 - b. All hard hats will be identifiable with the current PennDOT logo. If the contracted vendor cannot provide the PennDOT logo, then logos or decals can be ordered through PAPublisher. The currently approved PennDOT logo decals are 2 inches by 2 inches with permanent adhesive and a white or clear background. They can be ordered from PAPublisher on the home page. The climbing style hard hats can be used immediately until the logos are received and applied to the front of the climbing style helmet.
 - c. All hard hats shall have high visibility reflective material similar to the current PennDOT issued hard hats.
- H. (1) Accessories designed for hard hats, such as neck shades, sweatbands, doo-hats, hard hat coolant pads, chin straps, etc. may be worn with the hard hats.
- (2) Accessories for head protection must comply with all manufacturers' recommendations. Only specific items approved by the manufacturer shall be used. Do not use accessories that are not specifically approved from the manufacturer.
- I. Employees must not be allowed to wear any other object under the hard hat due to limited clearance between the hard hat suspension and the wearer's head, e.g., a baseball hat. Hard hats may not be worn backwards or sideways.
- J. Color Requirements
 - (1) Yellow-green hard hats shall be worn by all rank and file maintenance employees.
 - (2) White hard hats shall be worn by all construction employees, management and first level maintenance supervisors.
 - (3) Operator instructors are permitted to wear either yellow-green or blue hard hats. Blue hard hats are strongly encouraged to identify operator instructors.
- K. No writing or markings are permitted on the outside of the hard hat.
- L. Decals

Only PennDOT issued and approved decals (pressure sensitive stickers or tape with self-adhesive backing) may be adhered to the hard hats and bump caps, as described below. Any decal that does not meet these requirements must be removed.

 - (1) General requirements for all decals:
 - a. Must be nonmetallic and weatherproof
 - b. Must not exceed two inches in any dimension
 - c. Must not contain advertisements or unapproved slogans
 - d. Placement:
 - I. Must be at least half an inch above the helmet's edge
 - II. Must not interfere with the reflective striping or the PennDOT logo
 - e. Only one of each type may be displayed on each hard hat
 - f. Each organization will be responsible for the purchase or supply of approved decals
 - (2) The following decals are presently approved and optional for use on PennDOT hard hats:
 - a. Medical information carrier system

This system consists of a small decal on the exterior of the helmet, a carrier that smoothly adheres to the interior of the helmet, and a form on which an employee can write crucial, lifesaving emergency and medical information. The completed form is inserted into the carrier, to be retrieved and reviewed only by professional first responders in the event of a medical emergency. There are no requirements regarding the manufacturer or vendor of this system, or the colors, words, and symbols that appear on the decal.

- b. USA Flag - Optional
 District organizations are authorized, but not mandated to issue a USA flag decal in accordance with the following guidelines:
 - I. Must be the current USA flag configuration (50 stars, 13 stripes).
 - II. The star field must be positioned on the top left corner of the decal.

M. Purchasing Information

Hard hats, suspensions, chin straps, and bump caps must be purchased from UniqueSource (SAP/SRM contract number: 4400004306).

(1) Hard Hats

All hard hats are made of polyethylene and comply with ANSI Z89.1-2014 Type I, Class E requirements for industrial head protection. The PennDOT logo is positioned front and center, and a 1 inch wide silver reflective stripe is positioned approximately 1 inch above the rim of the hat, extending without interruption from one side of the logo around the back of the hard hat to the other side of the logo. The four point suspension with ratchet adjustment helps to provide good balance and adjusts for head sizes.

- a. Three colors are available, as follows:
 - I. Yellow-Green (YGR) is for rank and file employees.
 - II. White (WHT) is for first level supervisors and managers and construction employees.
 - III. Blue (BLU) is for operator instructors to be worn during active instruction.
- b. Two styles are available:
 - I. The V-Gard® Protective Cap is a standard hard hat with a brim at the front of the cap and is available in two sizes.

Product SKU	Material Master	Short Text Description	Product Category
18790771	297356	HAT,HARD,VGRD,YGR,LOGO,RFLCTV	46181701
18790762	297357	HAT,HARD,VGRD,BLU,LOGO,RFLCTV	46181701
18790744	297358	HAT,HARD,VGRD,WHT,LOGO,RFLCTV	46181701
18792668	350108	HAT,HARD,VGRD,LRG,YGR,LOGO,RFLCTV	46181701
18792660	350168	HAT,HARD,VGRD,LRG,BLU,LOGO,RFLCTV	46181701
18792656	350170	HAT,HARD,VGRD,LRG,WHT,LOGO,RFLCTV	46181701

- II. The V-Gard® Protective Hat has a full (SAFARI) brim that extends all the way around the hat and is only available in one size: Medium (fits sizes 6½ to 8).

Product SKU	Material Master	Short Text Description	Product Category
18767708	345087	HAT,HARD,VGRD,SAFARI,YGR,LOGO,RFLCTV	46181701
18767705	345102	HAT,HARD,VGRD,SAFARI,BLU,LOGO,RFLCTV	46181701
18767699	297379	HAT,HARD,VGRD,SAFARI,WHT,LOGO,RFLCTV	46181701

NOTE: UniqueSource helmets are designed with high quality, wear resistant materials but will not last forever. The helmet’s protective properties will degrade by exposure to many common work environments; temperature extremes, chemical exposure, sunlight, and normal wear and tear. We recommend the following replacement schedule; suspension every 12 months, helmet shell every five years. A helmet’s service life starts when it is placed in service. This date should be recorded inside the helmet shell. Please note that the date code on the brim of your helmet is the date of manufacture, not the start date for useful life.

(2) Hard Hat Accessories/Replacement Parts

a. Suspensions

Replacement head band, four point suspension with ratchet adjustment.

- I. Standard size adjusts to head sizes: 6 ½ - 8
- II. Large size adjusts to head sizes: 7 - 8 ½

Product SKU	Material Master	Short Text Description	Product Category
18767628	297372	HARD SFTY CAP,HEADBAND,RPLCMNT,6-1/2-8	46181706
18767629	345374	HARD SFTY CAP,HEADBAND,RPLCMNT,7- 8-1/2	46181706

b. Chin Strap

The chinstrap is elastic with plastic hooks and buckle. It attaches to the suspension and fits the V-Gard® Protective Cap and V-Gard® Protective Hat (SAFARI).

Product SKU	Material Master	Short Text Description	Product Category
18767635	345088	CHINSTRAP,FITS VGARD SAFETY CAP	46181706
18767636	345089	CHINSTRAP,FITS SAFARI SAFETY HAT	46181706
18767634	297368	CHINSTRAP,UNIVERSAL,FITS VGARD & SAFARI	46181706

c. Face Shield Frames and Visors

These must meet or exceed applicable requirements of ANSI Z87.1-2020 and are compatible with the V-Gard® Protective Cap and the V-Gard® Protective Hat. They are available for purchase from UniqueSource, but these are not on contract or vendor exclusive. These items may be purchased from another vendor if they are compatible with our hard hats.

- I. Face shield frames compatible with the V-Gard® Protective Cap available in plastic and metal. Face shield frames compatible with the V-Gard® Protective Hat are metal. (Visor sold separately.)

Product SKU	Material Master	Short Text Description	Product Category
4240-0200-058	297369	HARD SFTY CAP,FRAME,FACE SHIELD,MTL	46181707
4240-0200-068	297370	HARD SFTY CAP,FRAME,FACE SHIELD,PLSTC	46181707

- II. Face shield visors and wire screens can be cleaned with soap and water, and dried with 100% cotton cloth. Available in clear polycarbonate, green molded propionate, and wire 20 mesh screen with aluminum edge (meets basic ANSI Z87.1-2020).

Product SKU	Material Master	Short Text Description	Product Category
4240-0200-064	297373	HARD SFTY CAP,SHIELD,FACE,CLR,8X16X.060	46181702
4240-0200-066	297374	HARD SFTYCAP,SHIELD,FACE,GRN,8X16X.060	46181702
4240-0200-062	297375	HARD SFTY CAP,VISOR,SHIELD,FACE,8X17-1/2	46181707

(3) Climbing Style Hard Hats

Climbing style hard hats are optional for use in tree felling work (chain saw operators), bridge inspection and tunnel employees. These are designed to provide protections against vertical and angled impacts up to 60°. They are also rated for Class E protection and are available in two colors.

- a. The climbing style hard hats can be purchased through the NASPO ValuePoint Facilities MRO Supplies. The MRO contracts are currently with Grainger, Fastenal and MSC.

Two colors will be available:

- I. Yellow is for rank and file employees
- II. White is for first level supervisors and managers

NOTE: Contracts and vendors are subject to change and purchasers must be sure to check the contract overview located at www.emarketplace.state.pa.us prior to any purchase. Any contract or vendor changes will be listed in future policy updates in the MESH manual.

(4) Bump Caps

Bump caps are optional for use in garage areas and only by garage staff. These are designed to provide scalp covering to reduce exposure to abrasions and lacerations due to minor bumps, but they are not ANSI compliant head protection. There are no replacement parts available for these. They are available in two colors:

- a. Green (GRN) is for rank and file employees
- b. White (WHT) is for first level supervisors and managers

Product SKU	Material Master	Short Text Description	Product Category
18767725	297365	CAP,BUMP,GRN,ADJ 6-1/2 TO 8	46181701
18767727	297367	CAP,BUMP,WHT,ADJ 6-1/2 TO 8	46181701

5. Replacement Cycles for High Visibility Apparel and Hard Hats/Bump Caps

The replacement of vests, leggings/chaps, rainwear, hard hats and hard hat suspensions depends on the type of work, environmental factors, the person wearing the garment, and the care of garment.

- A. Replacement of these garments must be based on a visual inspection. The District Safety Coordinators (DSC) must establish procedures to ensure these garments are visually inspected annually.
- B. The garments must be replaced anytime one or more of the following conditions are observed:
 - (1) When there is fading, wear and tear of vests, leggings/chaps and rainwear

- (2) If the hard hat is cracked, faded or has been subjected to a significant impact
- (3) If hard hat suspensions are visibly worn or damaged
- C. In addition, manufacturer's specifications recommend that the suspension be replaced annually and hard hats every five years for hard hats worn daily.

6. Reissuing High Visibility Apparel and Hard Hats/Bump Caps

- A. Prior to re-issuing, the vests, leggings/chaps, rainwear and hard hats in good condition that are returned due to separation of employees must be washed/disinfected by the bureau/district/county.
- B. Hard hat suspensions must always be replaced prior to re-issuing.
- C. In general, garments must only be worn by the employee to whom it was issued unless the garment has been washed/disinfected by the bureau/district/county.

7. Hearing Protection

- A. Hearing protection must be worn when:
 - (1) The noise level in the work environment exceeds 85 decibels or as deemed necessary by the supervisor. (Contact the DSC for measuring noise levels in the work area.)
 - (2) Temporarily exposed to loud noise from operations such as pavement breaking, compacting, power impact or cutting tools, blasting, drilling, post pounding, etc.
- B. Two types of hearing protection are available:
 - (1) Ear plugs – inserted into ear canal to diminish noise
 - (2) Ear muffs – covers and seals the entire ear

8. Eye Protection

- A. Safety glasses (prescription/nonprescription) with side shields provide impact protection and must be worn:
 - (1) When operating or working near tools or machines that may throw particles such as woodworking tools, power tools, chippers, jack hammers, etc.
 - (2) At the direction of the supervisor.
- B. Safety goggles provide impact protection from flying particles, dust and mist/splash and must be worn:
 - (1) Whenever there is a need to protect the eye from particles, dust or mist/splash which cannot be stopped by wearing safety glasses.
 - (2) At the direction of the manager/supervisor.
- C. All eye protection devices must be marked "Z87" to indicate compliance with ANSI Z87.1 and "+" to indicate impact rating.
- D. Prescription Eye Protection Program

Each district and central office organization that has employees who are regularly assigned to areas or duties where eye protection is mandatory must administer a prescription eye protection program.

 - (1) Prescription safety glasses should be provided to permanent employees who wear prescription glasses and are frequently exposed to eye hazards while performing regularly assigned duties or regularly assigned to an area in which eye protection is mandatory.
 - a. District Executives and central office organizational heads along with their program administrators will make determinations for their respective organizations regarding employee eligibility to receive prescription eye protection based on the guidance provided in this section. The Employee Safety and Training Division may be contacted for assistance in making such determinations.

- b. Permanent employees who wear prescription glasses and are infrequently exposed to eye hazards while performing their regularly assigned duties are not eligible for PennDOT issued prescription eye protection and must be provided safety goggles that are designed to be worn over glasses.
 - c. Temporary employees are not eligible to receive prescription eye protection. Temporary employees who wear prescription glasses and are exposed to eye hazards or are required to work in areas where eye protection is mandatory must be provided safety goggles that are designed to be worn over their personal prescription glasses.
 - d. To participate in this program, employees will need to provide a copy of their current eyeglass prescription. Employees must use their vision benefits through National Vision Administrators (NVA) to cover the eye examination.
 - e. Basic frames and lenses for single vision, bifocal, and trifocal lenses will be covered in full by PennDOT. Additional frames and lens enhancement features may be offered to employees at the employees' expense, such as photochromic (light adaptive), progressive, polarized, scratch resistant, polished edges and anti-reflective.
 - f. All frames must have permanent side shields that are integral to their design (not detachable).
 - g. Permanently tinted lenses (sun glasses) are prohibited, as the lighting of work environments will vary.
 - h. Replacement prescription eye protection may be provided once every two years if there is a change in the prescription.
 - i. Prescription eye protection may only be issued prior to the two year replacement cycle if there is a documented event that occurred at work in which the eye protection was damaged performing its function.
 - j. Prescription eye protection must be replaced as soon as possible after a documented work event in which it was damaged by contact with an object while protecting an eye.
 - k. Goggles that are designed to be worn over glasses must be provided and worn over personal prescription glasses when and where eye protection is required until replacement prescription eye protection is issued.
 - l. Efforts should be ongoing to maintain a cost effective prescription eye protection program by coordinating with vendors that offer the best value available in each geographical area.
 - m. All applicable purchasing requirements must be followed.
- (2) When goggles are required, employees that wear prescription glasses must be provided safety goggles that are designed to be worn over prescription glasses.

9. Face Protection

- A. Face shields provide impact protection for the face from flying particles, dust and mist/splash and must be worn:
 - (1) Whenever there is potential for injury to the face from flying particles, dust or mist/splash from chemicals or other substances.
 - (2) At the direction of the supervisor.
- B. If eye protection is necessary, safety glasses or goggles must be worn along with the face shield.
- C. Face protection devices must comply with ANSI Z87.1.

10. Hand Protection

- A. Gloves must be worn whenever there is risk of abrasions, lacerations, burns, blisters, or punctures. In cases where hazardous products are involved, refer to the Safety Data Sheet (SDS).

- B. Waterless skin cleanser must be made available to all employees who do not have access to other clean up facilities.

11. Foot Protection

- A. Safety footwear must be of above the ankle design and is required for all employees engaged in or entering any field or garage operation. Safety footwear needs to have good tread to help prevent slips, trips and falls. Athletic footwear (e.g. sneakers or tennis shoes) is not permitted.
- B. Toe protection must be worn by all employees engaged in:
 - (1) Pneumatic spade, drill or tamper operations.
 - (2) All areas where there is a hazard from falling or rolling objects, or from accidental tool impact.
 - (3) PennDOT provides toe protection that attaches to safety footwear which is stored inside crew cabs for those employees not already wearing safety toe shoes.
- C. Appropriate safety footwear must be worn by all employees exposed to foot puncture hazards such as nails, glass, wire and other sharp objects.

12. Respiratory Protection

- A. When/where required, NIOSH/MSHA approved respirators must be worn. When assigned a negative pressure respirator, a medical evaluation questionnaire and pulmonary function test are required prior to use. Respirator training and fit testing are required before wearing any respirator. Reference Protocol 24, Respiratory Protection for additional information.
- B. Respirators must be worn when the following respiratory hazards exist:
 - (1) Gases
 - (2) Fumes
 - (3) Dust/mist
 - (4) Oxygen deficiency (must use supplied air respirator)
 - (5) Unknown atmosphere/hazard (must use supplied air respirator)
- C. Refer to the Safety Data Sheet for the products in use.
- D. If respirators are available to employees, but not mandatory, employees must be provided with a copy of OSHA Standard 29 CFR 1910.134 Appendix D "Mandatory Information for Employees Using Respirators When Not Required."

13. Welding

- A. Helmets must be used during all arc welding or arc cutting operations and arranged to protect the face, neck and ears from direct radiant energy. (Helpers or attendants must be provided with proper eye protection.) Helmets must be made of a material which is an insulator for heat and electricity and provided with filter plates and cover plates designed for easy removal.
- B. Goggles must be used during all gas welding or oxygen cutting operations. Goggles shall be ventilated to prevent fogging of the lenses as much as practicable.
- C. All operators and attendants of resistance welding or resistance brazing equipment shall use transparent face shields or goggles, depending on the job, to protect their faces or eyes, as required.
- D. Helmets, shields and goggles shall be not readily flammable and shall be capable of withstanding sterilization. All PPE must be constructed of a material which will not readily corrode or discolor the skin.
- E. All glass for lenses must be tempered. Except when a lens is ground to provide proper optical correction for defective vision, the front and rear surfaces of lenses and windows shall be smooth and parallel. Lenses must bear some permanent distinctive marking by which the source and shade may be readily identified.

- F. Filter lenses must have a shade number appropriate for the work being performed for protection from injurious light radiation in accordance with OSHA 1910.113.
- G. The following items approved for welding operations must be worn when welding: coveralls (or aprons and sleeves) and gloves.
- H. Where high visibility safety apparel is required, a fire resistant ANSI Class 2 vest is available for purchase only from UniqueSource.
- I. Respiratory protection is required in areas where local exhaust or general ventilating systems do not keep the concentration of toxic fumes, gases, and/or dusts below permissible exposure limits.
- J. To protect people adjacent to the welding area from arc welding rays, noncombustible or flame proof screens or shields that permit circulation of air at floor level must be used.

14. Crack Sealing

Employees involved in crack/joint sealing operations can be at risk for burns from hot tar or hot surfaces while operating the wand, operating the squeegee, or working on or near the tar kettle. The compressed air gun operator is also at risk from blow back of debris from the high-pressure hose. To reduce injuries from burns and flying debris, employees must wear the PPE outlined in the chart below when performing this assembly.

PennDOT currently uses several different types and brands of machines for this operation.

NOTE: To keep PPE consistent, PennDOT is identifying the wand operations for ball valve controlled equipment as older equipment. The wand operations for trigger controlled equipment is in reference to new/newer equipment in which employees are able to remove themselves from areas where there is a potential for splashing of hot liquid. Some counties use a manual loading machine, meaning the loader must put the sealant block in the machine. While other counties use a conveyor belt to load a machine placing the operator out of the material splash zone.

Please see the chart below to determine what type of machine you are using and what PPE is associated with and required for that machine. All districts must meet the minimum requirements listed below for PPE but have the option to exceed the requirements if deemed necessary. Keep in mind that if PPE requirements exceed the required PPE, there may be a concern of employees experiencing heat-related illnesses. Ensure to implement controls when necessary to prevent employees from experiencing heat-related illnesses

Crack Sealing - PPE Chart						
	Hard Hat & Outer Garment Must Meet or Exceed ANSI Class 2 Reflectivity	Solid Face Shield in Down Position	Safety Goggles (rated ANSI Z87+ for fine dust/mist)	Long Sleeved Shirt	Leather Gloves with Gauntlets that Extend Above the Wrist	Flame Retardant Hood and Welding Apron
Employee Starting or Operating the Tar Kettle	X	X		X	X	
Loading Operator(s) Manual Loading	X	X		X	X	X
Loading Operator(s) Conveyor Loading	X		X	X	X* (See #2)	
Wand Operator(s) – Ball Valve Controlled	X	X		X	X	X
Wand Operator(s) – Trigger Controlled	X	X		X	X	
Squeegee Operator(s)	X	X		X	X	
Compressed Air Gun Operator(s)	X		X			

- A. The PPE shall meet or exceed the following specifications:
 - (1) Face shields shall be in the “down” position and must be solid, transparent plastic, not mesh.
 - (2) Gloves shall be leather with gauntlets extending above the wrist.
 - (3) ANSI Class 2 as outer garment. (Night operations require ANSI Class 3 outer garment or can be achieved by wearing a Class 2 vest and chaps).
- B. The following PPE shall be worn when performing the following tasks:
 - (1) Loading operators (manual loading) shall wear a hard hat with full face shield attached in the “down” position, long sleeved shirt, long pants, leather gloves with gauntlets that extend above the wrist, safety footwear and an ANSI Class 2 outer garment (Night operations require ANSI Class 3 outer garment), flame retardant hood and a welding apron.
 - (2) Loading operators (conveyor loading) shall wear a hard hat, safety goggles, long sleeved shirt, long pants, regular work gloves*, safety footwear and an ANSI Class 2 outer garment (Night operations require ANSI Class 3 outer garment).
 - (3) Wand (Ball Valve Controlled) operators shall wear a hard hat with full face shield attached in the “down” position, long sleeved shirt, long pants, leather gloves with gauntlets that extend above the wrist, safety footwear and ANSI Class 2 outer garment (Night operations require ANSI Class 3 outer garment), flame retardant hood and a welding apron.
 - (4) Wand (Trigger Controlled) operators shall wear a hard hat with full face shield attached in the “down” position, long sleeved shirt, long pants, leather gloves with gauntlets that extend above the wrist, safety footwear and ANSI Class 2 outer garment (Night operations require ANSI Class 3 outer garment).
 - (5) Squeegee operators shall wear a hard hat with full face shield attached in the “down” position, long sleeved shirt, long pants, leather gloves with gauntlets that extend above the wrist, safety footwear and ANSI Class 2 outer garment (Night operations require ANSI Class 3 outer garment).
 - (6) Compressed air gun operator(s) shall wear a hard hat, long pants, safety goggles, safety footwear and ANSI Class 2 outer garment (Night operations require ANSI Class 3 outer garment).
 - (7) Any employee operating the tar kettle where danger of spraying or splashing of hot liquid could cause injury from burns must wear a hard hat with full face shield attached in the “down” position, long sleeved shirt, long pants, leather gloves with gauntlets that extend above the wrist, safety footwear and ANSI Class 2 outer garment (Night operations require ANSI Class 3 outer garment).
- C. Employees who have been splashed or sprayed with hot liquid, should cover the affected area with water to cool down the hot liquid or apply burn gel packets from first aid kits.
- D. If seeking professional medical treatment, do not attempt to remove material that is attached to the skin.
- E. Training required prior to crack sealing operations includes “Liquid Asphalt Safety/Crack Sealing Maintenance Assembly Training (MAT)” provided by a certified instructor or Operations and Performance Office staff and the “Tar Kettle Operation” training course provided by certified operator instructor within the past four years.

15. Hot Pour Mastics (HPM):

All districts must meet the minimum requirements listed below for PPE but have the option to exceed the requirements if deemed necessary. Keep in mind that if you exceed the required PPE there may be a concern of employees experiencing heat-related illnesses. Ensure to implement controls when necessary to prevent employees from experiencing heat-related illnesses.

Please refer to the chart below to determine what type of PPE is required for the job being performed.

Hot Pour Mastics - PPE Chart						
	Hard Hat & Outer Garment Must Meet or Exceed ANSI Class 2 Reflectivity	Solid Face Shield in Down Position	Safety Goggles (rated ANSI Z87+ for fine dust/mist)	Long Sleeved Shirt	Leather Gloves with Gauntlets that Extend Above the Wrist	Flame-Retardant Hood and Welding Apron
Employee Starting or Operating the Tar Kettle	X	X		X	X	
Loading Operator(s)	X	X		X	X	X
Dump Operator	X	X		X	X	
Squeegee Operator(s)	X			X	X	
Drag Box Operator	X			X	X	
Compressed Air Gun Operator(s)	X		X			

- A. The following PPE shall be worn when performing the following tasks in an HPM operation to reduce the potential hazards and possibility of burns:
- (1) Loading operators shall wear a hard hat with full face shield attached in the down position, long sleeved shirt, long pants, leather gloves with gauntlets that extend above the wrist, safety footwear and an ANSI Class 2 outer garment (Night operations require ANSI Class 3 outer garment), flame retardant hood and a welding apron.
 - (2) Dump operator shall wear a hard hat with a full face shield attached in the down position, long sleeved shirt, long pants, leather gloves with gauntlets that extend above the wrist, safety footwear and an ANSI Class 2 outer garment (Night operations require ANSI Class 3 outer garment).
 - (3) Squeegee operators shall wear a hard hat, long sleeved shirt, long pants, leather gloves with gauntlets that extend above the wrist, safety footwear and ANSI Class 2 outer garment (Night operations require ANSIClass 3 outer garment).
 - (4) Drag box operator(s) shall wear a hard hat, long sleeved shirt, long pants, leather gloves with gauntlets that extend above the wrist, safety footwear and ANSI Class 2 outer garment (Night operations require ANSI Class 3 outer garment).
 - (5) Compressed air gun operator(s) shall wear a hard hat, long pants, safety goggles, safety footwear and ANSI Class 2 outer garment (Night operations require ANSI Class 3 outer garment).
- B. Training required prior to HPM operations includes “Liquid Asphalt Safety/Crack Sealing Maintenance Assembly Training (MAT)” provided by a PennDOT certified instructor or Operations and Performance Office staff and the “Tar Kettle Operation” training course provided by PennDOT certified operator instructor within the past four years.

16. Tree Trimming, Felling and Removal (Chain Saw Operations)

A. In addition to the work attire, high visibility apparel, and head protection requirements for field operations, employees must wear the following while operating or servicing a chain saw:

- (1) Eye protection from falling or flying objects
- (2) Face protection (logger type mesh screens are acceptable)
- (3) Hearing protection
- (4) Hand protection which provides adequate protection from puncture wounds, cuts, and lacerations
- (5) Chain saw chaps: Leg protection constructed with cut resistant material, such as ballistic nylon, must cover the full length of the thigh to the top of the boot on each leg to protect against contact with a moving chain saw.

EXCEPTION: This requirement does not apply when an employee is working from an aerial lift or operating a pole saw.

B. All of the above PPE must be carried on any vehicle that is carrying a chain saw.

C. Refer to Protocol 23, Tree Trimming, Felling and Removal, for additional PPE information.

17. Seat Belts/Shoulder Harnesses

Seat belts and shoulder harnesses for vehicles so equipped, must be worn properly with the seat belt secured over the lap and the shoulder harness secured over the arm and shoulder.

A. Seat belt use for all equipment:

- (1) Seat belts need to be inspected daily by the operator for signs of damage (e.g. cut/frayed material) and kept in proper working condition.
- (2) Do not remove seat belts that are original equipment.
- (3) It is the responsibility of the supervisor/manager to educate employees on the safe use of equipment with and without seat belts.

Seat belts and shoulder harnesses for vehicles so equipped, must be worn properly with the seat belt secured over the lap and the shoulder harness secured over the arm and shoulder. Seat belts and shoulder harnesses must always be used when:

- a. Operating PennDOT vehicles and equipment.
- b. Operating personal vehicles on PennDOT business.
- c. Riding in any vehicle while on PennDOT business.
- d. Occupying a stationary or shadow vehicle in a work zone, or where the potential for a collision exists.

B. Seat Belt Extenders

- (1) If a seat belt extender is needed, the department may provide one in accordance with operational efficiency.
- (2) The primary resource for procuring a seat belt extender will be the manufacturer of the vehicle/equipment being utilized.
- (3) If the manufacturer does not offer a seat belt extender, a universal extender may be utilized so long as it complies with 49 CFR Part 571.209 of the Federal Motor Vehicle Safety Standards.

EXCEPTION: If manufacturer recommendations on the use of seat belts and shoulder harnesses during operations differ from PennDOT policy, then manufacturer's recommendations should be followed. Seat belts and shoulder harnesses are to be worn in accordance with manufacturer recommendations when operating PennDOT vehicles and equipment.

C. Additional Seat Belt Use for Paint Trucks:

- (1) Operators and passengers shall wear seat belts and shoulder harnesses (if equipped) whenever the painting vehicle travels to the next painting site at speeds exceeding 20 mph. Alternately, painting operators shall move to the cab and be secured by those seat belts and harnesses if the distance to the next job exceeds one mile. Operators must wear properly secured seat belts at their working stations if:
 - a. They are not operating the controls while standing; or
 - b. They can easily reach the controls while seated.
- (2) If employees are not actively engaged in the painting operation and are traveling at speeds exceeding 20 mph, then the employee(s)/operator(s) are not permitted to be in the back enclosed cab and shall reposition to the front enclosed cab of the paint truck, supply truck or foreman vehicle for safety purposes.

18. Program Review

This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

19. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Topic
1-16	Pub 445 (10-13) pages 33-43
3B	PPIM 14-168 Safety Apparel Required for Employees Performing Flagging Duties (Issued 3/14/14, Effective 6/30/14)
4I	Original, based on current practices
8D	PPIM 14-170 Prescription Eye Protection Program (Issued 6/20/14, Effective 7/1/14)
17-19	Original, based on AIPP requirements for Protocol 2

Protocol 3 – Hearing Conservation

Section	Topic	Page

PennDOT is committed to reduce or eliminate the level of noise in the work environment from work tasks and/or equipment to safe levels through engineering controls, administrative controls and/or personal protective equipment.

1. Scope

This protocol applies to all PennDOT employees and work tasks or equipment that may result in the employee encountering excessive noise that could contribute to hearing loss. Where noise levels exceed (or have the potential to exceed) 85 decibels (dBA) over an 8-hour time-weighted average (TWA) the employee shall be included in the hearing conservation protocol.

UNDER DEVELOPMENT

Protocol 4 – Sight Conservation

Section	Topic	Page
1	Scope	P4 - 1
2	Applicable Standards	P4 - 1
3	Personal Protective Equipment (PPE)	P4 - 1
4	Hazard Assessment	P4 - 2
5	Prescription Eye Protection Program	P4 - 4
6	Training Requirements	P4 - 4
7	Program Review	P4 - 5
8	Recordkeeping	P4 - 5

This protocol identifies protective equipment and work practices to protect employees' eyes from equipment and any physical or environmental hazards, through engineering controls, administrative controls and/or personal protective equipment (PPE). Methods may include PPE (mandatory safety glasses, goggles and face shields), point of operation equipment guards, nonhazardous tools, proper illumination and other similar engineering controls.

1. Scope

This protocol applies to all employees and job tasks that may result in the employee encountering flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases/vapors or potentially injurious light radiation. The purpose of this protocol is to establish policies that reduce or eliminate, if possible, hazards in the work environment to protect and conserve employee eyesight.

2. Applicable Standards

- A. OSHA 1910.133, Eye and Face Protection
- B. OSHA 1910.251-255, Welding Cutting and Brazing
- C. OSHA 1926.102, Eye and Face Protection
- D. ANSI Z87.1-2015, Occupational and Educational Personal Eye and Face Protection Devices
- E. ANSI Z358.1-2014, Emergency Eyewash and Shower Equipment
- F. Manufacturer Recommendations
- G. Safety Data Sheets
- H. National Consensus Standards for Certain Jobs or Trades
- I. Pub 517, Job Safety Analysis Manual

3. Personal Protective Equipment (PPE)

- A. Safety glasses: Primary protectors intended to shield the eyes from a variety of impact hazards. Safety glasses are intended to shield the wearer's eyes from impact hazards such as flying fragments and particles. Employees are required to use eye safety glasses with permanent side shields when there is a hazard. Non-side shielded glasses are not acceptable eye protection.

- B. Safety goggles: Primary protectors to shield the eyes against fine particulate such as dust, irritant or corrosive fumes and radiant heat. Safety goggles are intended to shield the wearer's eyes from hazards such as chemical splashes and particulate or radiant heat depending on the type. Goggles fit the face immediately surrounding the eyes and form a protective seal around the eyes.
- C. Face shield: Secondary protectors intended to protect the entire face against exposure to hazards. Face shields are intended to protect the entire face or portions of the face from hazards such as flying fragments and chemical splashes or radiant heat depending on the type and rating. When worn alone, face shields do not provide adequate protection to employees. Face shields shall be used in conjunction with safety glasses or goggles even in the absence of dust or potential splashes, for additional protection beyond that offered by glasses or goggles alone.
- D. Eye and face protection devices shall be marked "Z87" to indicate ANSI compliance and "+" to indicate impact rating.

4. Hazard Assessment

- A. It is the responsibility of the manager/supervisor, with assistance from the safety coordinator and/or safety consultant, to identify workplace hazards that may affect employee's eyes and eyesight. Supervisors are responsible to post appropriate signage if work areas are determined that employee's must wear eye protection. The supervisor and/or manager shall consider:
 - (1) Physical contact with flying objects, fragments and particles
 - (2) High heat exposure
 - (3) Chemical exposure
 - (4) Dust, fume or mist exposure
 - (5) Fire, sparks or potentially explosive material exposure
 - (6) Blood, body fluid and infectious disease exposure
 - (7) Areas with low illumination
 - (8) Intense light associated with welding, cutting or brazing tasks
- B. Once the hazards have been identified, it shall be determined if the hazards can be minimized or eliminated through engineering or administrative controls. If these controls are not feasible, PPE shall be considered and selected. Care shall be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards shall be provided.
- C. Refer to JSA Manual, Pub 517 when determining the type of PPE needed to perform certain work tasks safely.
- D. General guidance when considering appropriate eye protection
 - (1) Impact/Dust Hazards
 - a. Safety glasses with permanent side shields are the minimum eye protection required when impact hazards are present.
 - b. The size of the particulate presenting an impact hazard shall be taken into account when selecting eye protection. Large amounts of fine particulate such as dust may require the use of safety goggles to provide adequate eye protection.
 - c. Safety glasses/goggles shall be cleaned on a regular basis using wipes or cleaning solution specifically designed for use with safety glasses. If the eye protection becomes extremely dirty or broken it shall be discarded and replaced.
 - d. To extend protection to the entire face from flying objects and debris, a face shield shall be used in conjunction with safety glasses or goggles.
 - e. Damaged face shields shall be discarded or the shield portion replaced.

(2) Chemical Hazards

- a. Safety glasses/goggles with permanent side shields are the minimum eye protection required when handling hazardous chemicals. Anyone entering the laboratory shall wear safety glasses in posted areas. When working with a chemical that may generate irritating or corrosive fumes, the employee shall work within a fume hood.
- b. Safety glasses/goggles shall be cleaned on a regular basis using wipes or cleaning solution specifically designed for use with safety glasses. If the glasses/goggles become extremely dirty or broken, the glasses shall be replaced.
- c. When a face shield is required for protecting the eyes and face from chemical splashes, safety glasses or goggles shall be worn beneath the face shield.
- d. All employees working with chemicals or corrosive materials shall be provided with emergency eye wash and shower facilities. Corrosive liquids and gases shall be handled in the immediate proximity of an eye wash or emergency shower. Employees shall be aware of the nearest eye wash and emergency shower and how to operate them. The eye wash and emergency shower shall be maintained, tested and inspected according to manufacturer recommendations. Eye washes or emergency showers found to be not operational shall be tagged out of service and serviced before work with corrosive liquids and gases continues.
- e. Portable eye wash stations are acceptable as long as they meet ANSI Z358.1 for eye wash and emergency showers that are found not to be operational.
- f. Access to eye wash and emergency shower stations shall not be blocked.
- g. If an employee gets something hazardous in their eye, the employee shall immediately go to the emergency eye wash station and flush their eye with copious amounts of water for at least 15 minutes. The employee may require the assistance of a fellow employee to locate and operate the eye wash station. Employees wearing contacts shall try and remove these prior to operating the eye wash. They shall try and force the eyes open to ensure sufficient water is entering the eye. Depending upon the severity of the exposure, the employee may require additional emergency services. If so, managers/supervisors shall complete a Work-Related Injury Grab and Go Packet according to Chapter M of this publication.

(3) Welding/Heat Protection

- a. The intensity of visible light and radiant energy produced by welding operations varies depending on the task, the electrode size and the arc current. Employees involved in welding, cutting and brazing operations shall use PPE appropriate for welding operations.
- b. Only filter lenses with the appropriate shade number will provide protection against optical radiation. Filter lenses shall coincide to specific radiant energy exposure. Welding eye protection is constructed of heat resistant material such as vulcanized fiber or fiberglass and fitted with a filtered lens to protect the eyes from burns caused by infrared or other intense radiant energy. These devices protect the eyes and face from flying sparks, metal spatter and slag chips produced during welding, brazing, soldering and cutting. Filter lenses shall meet the requirement for shade designations in OSHA standard 1910.133(a)(5). Tinted and shaded lenses are not filter lenses unless they are marked or identified as such. When selecting filter lenses, begin with a shade too dark to see the welding zone then try lighter shades until one allows a sufficient view of the welding zone without going below the minimum protective shade. Use the shading chart below for reference.
- c. Welding helmets are secondary protectors intended to shield the eyes and face from optical radiation, heat and impact. Use welding helmets in addition to primary protection.

Welding Operation	Minimum Shade Number
Shielded metal-arc welding 1/16, 3/32, 1/8, 5/32 inch diameter electrodes	10
Gas shielded arc welding (nonferrous) 1/16, 3/32, 1/8, 5/32 inch diameter electrodes	11
Gas shielded arc welding (ferrous) 1/16, 3/32, 1/8, 5/32 inch diameter electrodes	12
Shielded metal-arc welding 3/16, 7/32, 1/4 inch diameter electrodes	12
Shielded metal-arc welding, 5/16, 3/8 inch diameter electrodes	14
Atomic hydrogen welding	10-14
Carbon-arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 to 6 inches	4 or 5
Heavy cutting, over 6 inches	5 or 6
Gas welding (light), up to 1/8 inch	4 or 5
Gas welding (medium), 1/8 to 1/2 inch	5 or 6
Gas welding (heavy) over 1/2 inch	6 or 8

(4) Lasers

- a. Laser work and similar operations create intense concentrations of heat, ultraviolet, infrared and reflected light radiation. PPE shall be selected based upon the laser manufacturer's recommendations and the operating conditions.

(5) Voluntary use of sunglasses are permitted when employees are not exposed to any other hazards and to be only used to reduce sun glare.

5. Prescription Eye Protection Program

PennDOT will provide fulltime employees wearing prescription eyewear with eye protection that either incorporates the prescription into the eye protection or fits over prescription eyewear without disturbing the proper position of the prescription. Employees who are required to wear a Powered Air Purifying Respirator (PAPR) or Air Purifying Respirator (APR) and wear prescription eyewear, respirator prescription insets shall be provided. Emergency use eyewear also designed for prescription use shall be marked as such, as to not create confusion during an emergency. Dusty and/or chemical environments may represent additional hazards to contact lens wearers. The prescription eye protection program will be administrated in accordance with the procedures outlined under Protocol 2, Personal Protective Equipment.

All purchases of prescription eye protection shall be made in accordance with Pub 445M, Manual for Employee Safety & Health, Protocol 2, Personal Protective Equipment, Section 8, subsection D.

6. Training Requirements

A. Sight Conservation - General Awareness (78SAFE000006)

- (1) Training can be obtained from the equipment manufacturers or a professional safety consultant. Each employee shall demonstrate an understanding of the training, information and an ability to use PPE properly before being allowed to perform any task requiring PPE. Training documentation shall be placed on the employee's training records.

B. Training shall generally include:

- (1) Eye hazards located in the workplace.
- (2) Controls in place to prevent eye injury.
- (3) When PPE is necessary.
- (4) What PPE is necessary.
- (5) How to properly wear PPE.
- (6) The limitations of the PPE.
- (7) The proper care and maintenance of the PPE.
- (8) Appropriate storage of PPE.
- (9) The location and operation of the nearest eyewash station or safety shower.
- (10) Proper procedures in reporting incidents and potential hazards.

C. Employees shall receive training:

- (1) Initially when starting a new job or job task that has not previously been performed by the employee.
- (2) When a job task or piece of equipment change affects the type of PPE required.
- (3) If the employee has been observed not wearing or improperly wearing PPE.

7. Program Review

This protocol will be reviewed by Employee Safety and Training Division for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

8. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Topic
	Pub 445 (1-18) page 38
	Protocol 2 – Personal Protective Equipment Section 8 Eye Protection
	PPIM 14-170; Prescription Eye Protection Program - Issue Date 06/20/14; Effective Date 07/1/14
	Prescription Eye Protection Program Administrators' Reference Guide
	Memo 12/20/2017 PennDOT Procurement Directive 17-03; Purchasing Card Manual (Pub 363) Change #3 – Prescription Eye Protection
	Protocol 2 – Personal Protective Equipment Section 9 Face Protection
	Protocol 2 – Personal Protective Equipment Section 13 Welding
	Protocol 2 – Personal Protective Equipment Section 14 Crack Sealing
	Protocol 10 – Bloodborne Pathogens Exposure Control
	Protocol 16 – Garages
	Pub 517, Job Safety Analysis Manual

Protocol 5 – Lockout Tagout

Section	Topic	Page
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2	Scope	P5 - 1
3	Applicable Standards	P5 - 1
4	Definitions	P5 - 1
5	Personal Protective Equipment (PPE)	P5 - 2
6	Roles and Responsibilities	P5 - 2
7	Lockout/Tagout Procedures	P5 - 3
8	Contractor/Consultants	P5 - 6
9	Training	P5 - 6
10	Communications	P5 - 7
11	Program Review	P5 - 7
12	Recordkeeping	P5 - 8

This protocol provides specific directions for the servicing and maintenance of equipment in which unexpected energization or start-up of the equipment or release of stored energy could cause injury to employees. This protocol establishes minimum requirements for the control of such hazardous energy.

1. Policy

To safeguard employees from unexpected release of hazardous energy while performing service and maintenance on machines or other powered equipment. This protocol identifies the practices and procedures needed to safely shut down, lockout and/or tagout and restart equipment. This protocol also identifies the requirements for employee training and periodic inspections to ensure energy control procedures are up-to-date and fully implemented by employees.

2. Scope

This protocol is applicable to all employees who perform service and maintenance work on machines, vehicles or other powered equipment which could potentially result in the hazardous release of energy. This protocol is also applicable to employees who perform service and maintenance work on electrical equipment, vehicles or other powered equipment that are 50 volts or higher.

3. Applicable Standards

- A. OSHA 1926 Subpart K, 1926.417, Electrical
- B. OSHA 1910 Subpart J, 1910.147, The Control of Hazardous Energy

4. Definitions

- A. Affected Employee: An employee whose job requires them to operate or use a machine, vehicle or equipment on which service/maintenance is being performed under lockout and/or tagout or whose job requires work in an area in which such servicing or maintenance is being performed.
- B. Authorized Employee: An employee who performs lockout and/or tagout procedures in order to perform servicing or maintenance on machinery or equipment.
- C. Energized: Connected to an energy source or containing residual, potential or stored energy.

- D. Energy Isolating Device: A mechanical device that physically prevents the transmission or release of energy.
- E. Energy Source: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other energy.
- F. Lockout: The placement of a designated device on an energy source in order to isolate the energy and bring the system to a zero-energy state in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be energized until the designated device is removed.
- G. Lockout Device: A device that utilizes a positive means (i.e. locks, chains, wedges, key blocks, adapter pins, self-locking fasteners or other hardware) to hold an energy isolating device in the safe position and prevent the energization of a machine or equipment.
- H. Normal Production Operations: The utilization of a machine, vehicle or equipment to perform its intended production function.
- I. Service and/or Maintenance: Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, etc. machines, vehicles or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.
- J. Setting Up: Any work performed to prepare a machine or equipment to perform its normal production.
- K. Tagout: The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.
- L. Tagout Device: A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the warning device is removed.

5. Personal Protective Equipment (PPE)

PPE may be required depending on the hazards associated with the task. At a minimum, safety glasses shall be worn when performing maintenance or servicing tasks on equipment or machinery. Head protection shall only be worn for employees engaging in any field operation involving maintenance and if the authorized employee is exposed to falling, flying or overhead electrical conductors. Additional PPE including flame resistant or arc-rated protections may be also required to perform the maintenance/service task safely. Supervisors/managers are responsible for informing authorized persons of any additional PPE requirements based on the maintenance/service to be performed.

6. Roles and Responsibilities

Each employee is expected to follow the guidelines provided within this policy. Supervisors of work covered by this protocol and those employees performing lockout/tagout procedures are responsible for ensuring compliance with the policy, procedures and guidance related to this protocol.

A. Employee Safety and Training Division

- (1) Establish and maintain PennDOT policy and guidance for implementing an effective lockout/tagout protocol.
- (2) Assist in the development of machine/equipment/task specific lockout/tagout procedures.
- (3) Coordinate employee training to affected employees as appropriate and according to their level of involvement in the protocol if warranted.
- (4) Conduct random inspections of the work site and equipment to ensure the protocol is being used and maintained properly.

- B. District Executives/Assistant District Executives/Bureau Directors
 - (1) Ensure the proper implementation of this protocol in accordance with PennDOT procedures.
 - (2) Provide the necessary resources to ensure PennDOT employees involved in lockout/tagout procedures are properly trained and equipped to perform the work in accordance with this protocol.
 - (3) Provide timely follow-up on employee concerns.
- C. Manager/Supervisor
 - (1) Coordinate and/or provide employee training to affected employees as appropriate and according to their level of involvement in the protocol.
 - (2) Ensure employees are aware of and follow lockout/tagout procedures.
 - (3) Ensure the proper equipment is available to perform lockout/tagout procedures.
 - (4) Provide timely follow-up on employee concerns.
- D. Authorized Employee
 - (1) Understand the hazards, energy sources and methods of control required to perform lockout/tagout procedures.
 - (2) Use, maintain and store lockout/tagout equipment in accordance with PennDOT procedures.
 - (3) Follow machine/equipment/task specific lockout/tagout procedures.
 - (4) Inspect equipment before and after use.
 - (5) Attend required training.
- E. Affected Employee
 - (1) Understand and adhere to the procedures outlined in the lockout/tagout protocol.
 - (2) Inspect equipment before each use.

7. Lockout/Tagout Procedures

- A. Only authorized employees who are performing the service/maintenance can perform lockout/tagout. All locks shall be affixed with a tagout device that legibly states the name and telephone number of the authorized employees conducting the lockout/tagout application.
- B. Affected employees shall be notified by a PennDOT supervisor or the authorized employee of the application and removal of lockout/tagout device(s). Notification shall be given before the controls are applied and after they are removed from the machine/equipment.
- C. The established procedures for the application of energy control (the lockout/tagout procedures) shall cover the following elements and actions and shall be done in the following sequence:
 - (1) Preparation for shutdown: Before an authorized employee turns off a piece of equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.
 - (2) Equipment shutdown: Equipment shall be turned off or shut down using the procedures established for the equipment. An orderly shutdown shall be utilized to avoid any additional or increased hazard(s) to employees resulting from the equipment stoppage.
 - (3) Equipment isolation: All energy isolating devices that are needed to control the energy to the equipment shall be physically located and operated in such a manner as to isolate the equipment from the energy source(s).
 - (4) Lockout/Tagout device application: Lockout/tagout device(s) shall be affixed to each energy isolating device by authorized employees.
 - a. Lockout devices, where used, shall be affixed in a manner that will hold the energy isolating devices in a "safe" or "off" position.

- b. Tagout devices, where used, shall be affixed in such a manner that will clearly indicate that the operation or movement of energy isolating devices from the “safe” or “off” position.
 - c. Tagout devices should be affixed/placed directly onto the applicable equipment and shall be visible.
 - d. Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.
 - e. Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include the following:
 - I. Warn employees about the hazards if the machine is energized and;
 - II. Offer employees clear instruction such as “Do Not Operate”, “Do Not Close”, “Do Not Energize”, “Do Not Start.”
 - III. Standardized according to color, shape or size.
 - IV. Standardized according to print and format.
 - V. Shall be legible and understandable by all employees.
 - VI. Name and phone number of authorized person(s) placing the tag.
 - VII. Substantial enough to minimize the likelihood of premature or accidental removal.
 - VIII. Durable enough to withstand workplace conditions.
 - IX. Tagout devices shall not deteriorate or become illegible even when used with corrosive components.
 - X. Tag attachments shall be nonreusable, self-locking and nonreleasable, with a minimum unlocking strength of 50 pounds.
 - XI. Tags shall be attached by hand.
- (5) **Stored Energy:** Following the application of lockout/tagout device(s) to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained or otherwise rendered safe.
- a. If there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed or until the possibility of such accumulation no longer exists.
- (6) **Verification of Isolation:** Prior to starting work on equipment that has been locked out or tagged out, the authorized employee shall verify that isolation and de-energizing of the equipment has been accomplished.
- (7) **Release from Lockout/Tagout:** Before lockout/tagout device(s) are removed and energy is restored to the equipment, procedures shall be followed and actions taken by the authorized employee(s) to ensure the following:
- a. The work area shall be inspected to ensure the nonessential items have been removed and to ensure that the equipment components are operationally intact.
 - b. The work area shall be checked to ensure that all employees have been safely positioned or removed.
 - c. After lockout/tagout device(s) have been removed and before equipment is started, affected employees shall be notified that the lockout/tagout device(s) have been removed.

(8) Lockout/Tagout Device(s) Removal:

- a. Each lockout/tagout device shall be removed from each energy isolating device by the employee who applied the device.

EXCEPTION: When the authorized employee who applied the lockout/tagout device is not available to remove it, that device may be removed under the direction of the manager provided that the alternate procedures used provide equivalent safety for the removal of the device by the authorized employee who applied it. The alternate procedure shall include at least the following elements:

- i. Verification by the supervisor that the authorized employee who applied the device is not at the facility.
- ii. Verification that all reasonable efforts have been made to contact the authorized employee to inform the employee that their lockout/tagout device has been removed.
- iii. Ensuring that the authorized employee is informed of the removal of their lock before they resume work at that facility.

D. Testing/positioning of equipment or components thereof:

- (1) In situations in which lockout/tagout device(s) shall be temporarily removed from the energy isolating device and the equipment to test or position the equipment, or component, for example troubleshooting, the following sequence of actions shall be followed:

- a. Clear the equipment and area of tools and materials.
- b. Ensure there are no slips/trips/falls or housekeeping hazards.
- c. Remove employees from the equipment area.
- d. Remove the lockout/tagout device(s) as specified.
- e. Energize and proceed with testing or positioning.
- f. De-energize all systems and reapply energy control measures to continue the servicing and/or maintenance.

E. Group lockout/tagout

- (1) When servicing and/or maintenance is performed by a crew, craft, department, or other group, a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout/tagout device shall be used.

- (2) Group lockout/tagout device(s) shall be used in accordance with the procedures of this section including, but not necessarily limited to the following specific requirements:

- a. Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout/tagout device (such as operations lock).
- b. Provision for the authorized employee to verify the exposure status of the individual group members with regard to the lockout/tagout of the equipment.
- c. When more than one crew, craft, department, etc. is involved, assignment of overall job associated lockout/tagout control responsibility will be made to an authorized employee designated to coordinate affected work forces and ensure continuity of protection.
- d. Each authorized employee shall affix a personal lockout/tagout device to the group lockout device, group lockbox or comparable mechanism when the employee begins work and shall remove those device(s) when the employee stops working on the machine or equipment being serviced or maintained.

F. Shift or personnel changes

Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of lockout/tagout protection, including provision for the orderly transfer of lockout/tagout protection between offgoing and oncoming employees, to minimize exposure to hazards from unexpected energizing or startup of the equipment or the release of stored energy.

G. Setup

Any service/maintenance tasks that require the employee to perform set up operations for example on mechanical power presses, replacing pulleys, or fan belts, the machinery or equipment shall be locked out/tagged out before performing such task. If an energy source is required for such task, an alternative protection plan shall be developed and approved by a competent person to protect the employee from the possible release of hazardous energy.

H. Exclusions

- (1) Machines or equipment where the only source of energy is from the connection to an electrical outlet through cords and plugs will not need to adhere to the lockout/tagout protocol as long as:
 - a. The plug is removed from the electrical source.
 - b. The employee has control of the plug at all times.
 - c. All affected employees are notified of the service/maintenance being done.

8. Contractors/Consultants

When outside contractors will be engaged in activities that require lockout/tagout, the supervisor and contractor's competent person will inform each other of their respective energy control procedures. A group lockout/tagout will take place. A PennDOT supervisor and the contractor's competent person will both apply locks and tags to each machine or equipment's energy source. Both the PennDOT supervisor and contractor's competent person will verify together that all energy sources have been isolated before conducting any maintenance or servicing tasks.

9. Training

A. Initial Training

PennDOT will provide training to ensure that the purpose and function of the lockout/tagout protocol are understood by employees and that the knowledge and skills required for the safe application, usage and removal of the energy controls is acquired by employees. The training shall include the following:

- (1) Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace and the methods and means necessary for energy isolation and control.
- (2) Each affected employee shall be instructed in the purpose and use of the energy control procedure.
- (3) Hazardous exposures and control measures.
- (4) Types of safeguards and how they protect from hazards.
- (5) Proper operation and limitations of safeguards.
- (6) Maintenance, care and inspection of safeguards.
- (7) Procedures for the temporary removal of safeguards.
- (8) Procedures for reporting damaged or missing safeguards.
- (9) Safe work practices.
- (10) Electrical hazards and proper work procedures.

- (11) All other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure and about the prohibition relating to attempts to restart/re-energize machines, equipment, or vehicles which are locked out or tagged out.

B. Tagout Training

When tagout systems are used, PennDOT will train employees in the following limitations of tags:

- (1) When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored or otherwise defeated.
- (2) Tags shall be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area.
- (3) Tags and their means of attachment shall be made of materials which will withstand the environmental conditions encountered in the workplace.
- (4) Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.

C. Annual Refresher Training

- (1) PennDOT will conduct annual refresher training for all authorized and affected employees whenever there is a change in their job assignments, a change in equipment, vehicles, and processes that present a new hazard or when there is a change in the energy control procedures.
- (2) Additional retraining shall be conducted whenever a periodic inspection of the energy control procedures reveals or when management has reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.
- (3) Retraining shall re-establish employee proficiency and introduce new or revised control methods and procedures, as necessary.

10. Communications

Affected employees will be notified by supervisors or an authorized employee of the application and removal of lockout/tagout devices. Verbal notification shall be given before the controls are applied, and after they are removed from the machine or equipment. Constant communication shall be established before re-energization of equipment/machinery.

11. Program Review

The effectiveness of this protocol in preventing workplace hazards, injuries and illnesses will be evaluated annually by the Employee Safety and Training Division with appropriate actions taken to address any deficiencies found.

12. Recordkeeping

Training records for each employee detailing training received and the date it was received will be documented, recorded and retained for three years. The hazard assessments and specific lockout/tagout procedures will be reviewed and updated annually and maintained by the district. Hazard assessments and specific lockout/tagout procedures shall be kept on or near the specific equipment, machinery, or vehicle.

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Topic
1-12	Original based on AIPP structure for protocols

Protocol 6 – Hazardous Substance Program

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2	Applicable Standards	P6 - 1
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7	Central Office Employee Safety and Training Division Communications	P6 - 6
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11	Appendix A - GHS Hazard Pictograms	P6 - 8

1. Scope

This protocol establishes the policies, responsibilities and procedures necessary to ensure safe handling, use and storage of hazardous substances by employees and contractors who handle or may otherwise be exposed in the workplace and to ensure hazardous substance information is made available.

2. Applicable Standards

- A. OSHA 1910.1200 Hazard Communication Standard
- B. Pennsylvania Worker and Community Right-to-Know Act – Act 159 of 1984
- C. Management Directive 505.27 Worker and Community Right-to-Know

3. Definitions

- A. Container: Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank or an object that contains a hazardous substance. This protocol does not consider pipes, piping systems, engines, fuel tanks or other operating systems in vehicles/equipment as containers.
- B. Exposure: A workplace operation or situation where an employee may inhale, ingest, absorb through the skin or eye contact, and otherwise come into contact with a hazardous substance.
- C. Globally Harmonized System (GHS): A globally accepted method of hazardous substance labeling using pictograms, hazard and/or precautionary statement(s). A signal word of “Warning” implies mildly hazardous products; “Danger” implies severely hazardous products.
- D. Hazardous Substance: Any substance or mixture which can create a hazard through contact or exposure. A source list of hazardous substances for each PennDOT site can be obtained by contacting the county Hazardous Substance Coordinator who will print a Hazardous Substance Survey Form (HSSF) Report from SDS Pro software. An entire reference list of all hazardous substances can be found in the PA Worker and Community Right-to-Know Act, Section 7.

- E. Hazardous Substance Coordinator (HSC): Employee responsible for oversight of hazardous substance inventories and Safety Data Sheets (SDSs) in the hazardous substances database for designated PennDOT facilities. Typical positions suitable for this include Safety Coordinator, Roadway Programs Coordinator, Equipment Manager, Purchasing Agent or Storeroom Clerk.
- F. Hazardous Substance Survey Form (HSSF): A document showing a list of hazardous substances ingredients and their respective Chemical Abstract Service (CAS) numbers for various products stored or used in the workplace.
- G. Inventory by Location Report: A document showing a list of all hazardous substance products for each worksite by name and manufacturer. This can be generated from the hazardous substances database.
- H. Product Name: A clear, easily recognizable designation or identification of a specific hazardous substance or product which is not the scientific name.
Example: WD-40.
- I. Safety Data Sheet (SDS): An SDS is a written document prepared by the manufacturer using a globally accepted format of substance product safety information. It uses a standardized 16 section format and one or more of nine pictograms to designate hazard types. Hazard and precautionary statements further explain specific safety and personal protective equipment (PPE) information.

4. Databases

- A. PennDOT SDS Intranet is available without any special authorization as a read-only database for all department employees with PennDOT intranet access. It enables viewing of hazardous substances by location or through a simple product name or manufacturer search. SDSs, hazard summaries, and printing of GHS labels may also be generated. This site can be accessed through the following link: <http://sds.penndot.lcl/>
- B. Web Inventory Manager (WIM) is a simpler web based version of SDS Pro utilized by Hazardous Substance Coordinators. It offers all of the functions of the PennDOT SDS intranet site plus the ability to add or delete hazardous substances or products stored at each facility. Although WIM will not print the Annual HSSF Report, it will generate Inventory by Location Reports and has links to SDSs, hazard summaries (an abbreviated SDS) and GHS labels. No software download is required. Password access to WIM and related training are provided through central office safety staff.
- C. SDS Pro is a complex hazardous substance database utilizing software. It offers a full range of functions enabling editing and creation of master product records to include GHS safety information, CAS numbers, Hazard and Precautionary Statements and importing of new SDSs. GHS labels can be printed as well as the Annual HSSF, Inventory by Location and SDS Binder Reports. Authorization for software downloads and password access for use of SDS Pro are strictly controlled by central office safety staff to ensure proper selection and training of Hazardous Substance Coordinators.

5. Responsibilities

- A. Central Office Employee Safety and Training Division:
 - (1) Ensure a HSC is designated for PennDOT facilities where employees are exposed to hazardous substances and maintain a current roster of all HSCs throughout PennDOT.
 - (2) Provide PennDOT organizations necessary guidance or policy updates on the proper administration of the hazardous substance program.
 - (3) Communicate in writing by March 1 of each year to all region, district and county organizations the required annual posting of the Hazardous Substance Survey Form (HSSF) and Inventory by Location Reports, as described in Section 6 of this protocol.

- (4) Develop and conduct training on the use of the hazardous substances database and provide access to it. Update and provide all training resources to applicable employees.
 - (5) Develop and maintain the SDS Pro User Guide.
- B. Safety Coordinators:
- (1) Coordinate with County Managers to ensure HSCs are actively tracking hazardous substance inventories for their assigned locations such as stockpiles, store rooms, and garages.
 - (2) Ensure that the Employee Safety and Training Division has an updated list of the HSCs in each region, district and county, along with their computer ID numbers.
 - (3) Ensure annual Right-to-Know Chemicals in the Workplace training is being completed and documented in employees' training records.
 - (4) Periodically monitor the hazardous substance database, HSSF and work area lists for all assigned garages, weld shops and stockpiles. Inform appropriate HSC and Central Office Employee Safety and Training Division of any discrepancies.
 - (5) Coordinate access to, and necessary training for, the Hazardous Substance database with the Employee Safety and Training Division and assist HSCs with assigned functions.
 - (6) Ensure while conducting inspections, secondary containers are labeled properly and documented appropriately on the inspection form.
- C. Management Overseeing Each Facility
- (1) Ensure all containers on site and in field use are properly labeled with either the factory supplied label or a secondary container label in accordance with the criteria outlined under Section 6.B Labeling Requirements.
 - (2) Conduct an annual review of all hazardous substances in accordance with requirements specified under Section 6.A Inventory Review.
 - (3) Post the annual HSSF and an updated Inventory by Location Report by product name at each facility where hazardous substances are used or stored.
 - (4) Ensure that new and transferring employees are informed of the HSSF, Inventory by Location Report and any applicable SDSs before engaging in work involving actual or potential exposure to hazardous substances.
 - (5) Designate a HSC and alternate for each county or organization with employees who may be exposed to hazardous substances.
 - (6) Ensure the Employee Workplace Notice is posted in employee bulletin board areas.
 - (7) Ensure current SDSs are accessible to employees.
 - (8) Ensure SDS binders are reviewed annually and updated accordingly with SDSs.
- D. Hazardous Substance Coordinators (HSCs)
- (1) Ensure accurate tracking of all hazardous substances stored at assigned locations in the hazardous substance database. A primary HSC and alternate are required for each county or organization.
 - (2) Conduct an annual hazardous substance inventory review in conjunction with county or local management to assess onsite inventory of all hazardous substances.
 - (3) Generate and post updated annual HSSF and Inventory by Location Reports for each garage, weld shop and stockpile by April 1 of each year.
 - (4) Attend periodic training on the hazardous substance database held by either an experienced HSC, Safety Coordinators or Central Office Employee Safety and Training Division staff.

E. Managers/Supervisors:

- (1) Maintain SDSs applicable to hazardous substances in use at crew, garage, and stockpile locations. SDSs must be accessible to all employees.
- (2) Ensure employees have, use, and are trained on PPE for all hazardous substances at their work sites as specified by the SDS, the Job Safety Analysis Manual Pub 517 or existing safety policies.
- (3) Review the SDS for any hazardous substances an employee may handle or work around before the employee engages in that work. This review shall include the PPE requirements, proper handling and storage methods and first aid guidance.
- (4) Immediately notify employees of any changes in assigned tasks or procedures involving chemicals or work operations that show an increased potential for risk of exposure to hazardous substances.

F. Employees

- (1) Attend applicable training in accordance with Section 8 of this protocol.
- (2) Alert management of damaged, missing or illegible GHS tags or labels.

6. Procedures**A. Inventory Review**

- (1) An annual audit of hazardous substances by product name and manufacturer that are stored at repair garages, weld shops and stockpiles shall occur between January 1 and March 31.
- (2) The HSC or designated employee will cross check physical inventory of hazardous substances in use at all garages, weld shops and stockpiles with the Inventory by Location Report from the hazardous substance database. This process shall occur prior to the annual posting of the HSSF and returned Inventory by Location Reports.
- (3) The HSC will input these product updates into the hazardous substance database as necessary with revised SDSs or any associated safety data entry.
- (4) New Inventory by Location Reports shall then be generated for all affected organizations. Reports shall be unique to each location. Copying an entire 01 stockpile inventory over to smaller stockpiles to avoid site specific inventory auditing is not acceptable.
- (5) When the above steps are completed, new Inventory by Location and HSSF Reports shall be printed, posted and distributed to county management by April 1 of each year.

B. Labeling Requirements

- (1) All containers of hazardous substances shall be tagged or labeled using GHS to identify the product name, hazard information and basic PPE recommended. Factory supplied labeling on original containers of hazardous substances shipped meet all labeling requirements in accordance with GHS as long as it is in good condition and is legible.

NOTE: National Fire Protection Association (NFPA), Hazardous Materials Identification System (HMIS), and the previously PennDOT issued GHS/NFPA transition tags or labels must be discarded and replaced with the current PennDOT GHS only tag or GHS label.

- (2) Factory supplied containers shall at least display the following information on the tag/label:
 - a. Product identifier or product name
 - b. Supplier identification (company name, street address, city, state, postal code, country and emergency phone number)
 - c. Hazard statement
Example: Highly flammable liquid and vapor may cause liver and kidney damage, respiratory irritant, etc.
 - d. Applicable hazard pictograms

- e. Signal words (warning or danger)
 - f. Precautionary statement
Example: Safety goggles; chemical gloves; do not eat, drink or smoke when using this product; etc.
 - g. Any supplemental information
Example: directions for use
- (3) If a hazardous or nonhazardous substance is dispensed into another container, that is considered a secondary container. Secondary containers need to be cleaned in between use prior to filling the container with a new substance to prevent cross contamination and/or to avoid a chemical reaction. Once cleaned, the container may be filled with the new substance. Secondary containers shall be tagged or labeled using the PennDOT approved GHS tag/label to identify the product name, hazard information and recommended PPE.
- (4) To condense important safety-related information with limited space regarding secondary container tag/labels, the following information shall at least be displayed:
- a. Product name, manufacturer or identifier
 - b. Hazard statement
 - c. Applicable signal word
 - d. Applicable hazard pictogram
 - e. Required PPE
 - f. Precautionary statement(s)/First Aid
- (5) Obtaining information to create a secondary container tag or label can be found reviewing the applicable SDS for that product.
- (6) Permanently stationed tanks may use a sign posted nearby or a large (7" x 10") GHS label may be affixed to the tank itself.

C. PennDOT GHS Tag/Label Completion

All portions of the PennDOT GHS tag/label shall be completed and placed on the secondary container as appropriate with a zip tie, adhesive backing or other means for proper securement.

(1) Tag/Label

- a. Employee(s) shall clearly write the product name/identifier/manufacturer of the material in the first box with permanent ink on the tag/label. This information can be found in the SDS Section 1.
- b. Employee(s) shall clearly write the Hazard Statement(s) that are found in the SDS Section 2 in the second box with permanent ink on the tag/label.
- c. Employee(s) shall check the appropriate signal word, either DANGER! or WARNING! that is established in the SDS on the tag/label.
- d. Employee(s) shall either check the appropriate GHS pictograms that are found in the SDS Section 2, or completely color in the pictograms that are not applicable to that product with permanent ink on the tag/label.
- e. Employee(s) shall check the PPE that is required when handling this product. This information can be found in the SDS Section 8. The PPE pictograms on the tag/label read left to right as:
 - I. Safety glasses, goggles, face protection
 - II. Filter face piece, half mask respirator, boots
 - III. Gloves, apron, Tyvek suit
- f. Employee(s) shall clearly write the precautionary statement(s) and first aid information that is found in the SDS Section 2 and 4 in permanent ink on the tag/label.

7. Central Office Employee Safety and Training Division Communications

By March of each year, an annual memorandum is sent out by the Central Office Employee Safety and Training Division via email to HSCs, managers that oversee facilities and safety coordinators containing the following information:

- A. The Pennsylvania Worker and Community Right-to-Know (RTK) Act requires the annual completion and posting of the HSSF and annual employee training.
- B. Please ensure the following steps are completed:
 - (1) Physically check current substance product inventories at all locations and ensure accurate inventory tracking in SDS Pro. Refer to the SDS Pro User Guide on the HR Portal <https://spportal.dot.pa.gov/sites/pea/TEO/HRPortal/Director's%20Office/Safety&Development/Safety/Pages/default.aspx> to assist you with this process.
 - (2) Master product records shall be reviewed to ensure complete GHS information for all locations in SDS Pro using the GHS label and ingredient tabs. Existing product records with outdated MSDSs or SDSs shall first be updated by archiving the old MSDS or SDS and importing a new SDS.
 - (3) Print/post updated HSSF forms and Inventory by Location Reports at each facility using SDS Pro by April 1 every year. The steps for running Inventory by Location Report and SDS Binder report are indicated in the SDS Pro User Guide.
 - (4) Ensure compliance with all training requirements of the Hazardous Substance Program.
- C. Safety coordinators are responsible for reviewing the requirements contained in this protocol and for notifying Central Office Employee Safety and Training Division of any changes to the HSC roster. Please direct requests for training and password access for SDS Pro, and any questions regarding the content of this protocol, to the Employee Safety and Training Division resource account at [RA- PDEESAFETYCOORD@pa.gov](mailto:RA-PDEESAFETYCOORD@pa.gov).

8. Training

- A. Employees Exposed to Hazardous Substances:

All employees occupationally exposed to hazardous substances shall attend one of the following Right-to-Know Hazardous Substances courses within 120 days of hire and annually thereafter:

 - (1) Classroom instruction using the PowerPoint presentation and training materials developed and maintained by the Employee Safety and Training Division.
 - (2) Web based instruction, available through Employee Self Service (ESS).
- B. Hazardous Substance Coordinators:
 - (1) Attend Right-to-Know Hazardous Substances training featuring the current PowerPoint.
 - (2) Receive live instruction on the current hazardous substance database and PennDOT SDS intranet site within six months of designation as an HSC.

9. Program Review

This protocol will be reviewed for any changes and updates of the procedures annually. Details of the annual review will be documented under Recordkeeping.

10. Recordkeeping

This protocol contains all new information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety & Health (MESH) is identified as “original.”

Section	Topic
1-8	PPIM 16-106 Hazardous Substance Program (Issued 7/20/2016) with some minor modifications
9-10	Original, based on AIPP Requirements for Protocol 6
App. A	Original, based on GHS standards

Appendix A

GHS Hazard Pictograms

<p style="text-align: center; margin-bottom: 5px;">Health Hazard</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> ▪ Carcinogen ▪ Mutagenicity ▪ Reproductive Toxicity ▪ Respiratory Sensitizer ▪ Target Organ Toxicity ▪ Aspiration Toxicity 	<p style="text-align: center; margin-bottom: 5px;">Flame</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> ▪ Flammables ▪ Pyrophorics ▪ Self-Heating ▪ Emits Flammable Gas ▪ Self-Reactives ▪ Organic Peroxides 	<p style="text-align: center; margin-bottom: 5px;">Exclamation Mark</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> ▪ Irritant (skin and eye) ▪ Skin Sensitizer ▪ Acute Toxicity (harmful) ▪ Narcotic Effects ▪ Respiratory Tract Irritant ▪ Hazardous to Ozone Layer (Non-Mandatory)
<p style="text-align: center; margin-bottom: 5px;">Gas Cylinder</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> ▪ Gases Under Pressure 	<p style="text-align: center; margin-bottom: 5px;">Corrosion</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> ▪ Skin Corrosion/Burns ▪ Eye Damage ▪ Corrosive to Metals 	<p style="text-align: center; margin-bottom: 5px;">Exploding Bomb</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> ▪ Explosives ▪ Self-Reactives ▪ Organic Peroxides
<p style="text-align: center; margin-bottom: 5px;">Flame Over Circle</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> ▪ Oxidizers 	<p style="text-align: center; margin-bottom: 5px;">Environment (Non-Mandatory)</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> ▪ Aquatic Toxicity 	<p style="text-align: center; margin-bottom: 5px;">Skull and Crossbones</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> ▪ Acute Toxicity (fatal or toxic)

Protocol 7 - Confined Space Entry

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Occasionally, PennDOT employees must enter confined spaces to perform job tasks. Prior to entry into these spaces, the risks need to be identified and controlled, proper safety equipment must be provided and used, and employees must be properly trained on the risks and controls for entering the confined space. This protocol ensures protection for employees from the hazards and risks associated with confined space entry. When entry into a confined space is necessary, all reasonable efforts will be made to remove or eliminate confined space hazards before employees enter and work in these spaces.

1. Policy

The hazards and risks associated with employees and contractors entering confined spaces must be adequately and appropriately addressed prior to and during entry into confined spaces, to prevent employee exposures to hazardous conditions when entering and working within a confined space. Mandatory procedures prescribe the minimum criteria for preventing employee exposures to hazardous conditions when entering and working within a confined space. Additional requirements to those identified in this protocol may be designated for confined space entry by supervisors and managers.

2. Scope

This protocol applies to any situation in which an employee or contractor will need to enter a confined space.

3. Applicable Standards

- A. OSHA 1926 Subpart AA, Confined Spaces in Construction (1926.1200 through 1926.1213)
- B. OSHA 1910.146, Permit Required Confined Spaces

- C. American National Standards Institute (ANSI), "Safety Requirements for Working in Tanks and Other Confined Spaces", ANSI Z117.1-2003
- D. National Institute for Occupational Safety and Health (NIOSH), Criteria Document, "A Guide to Safety in Confined Spaces", July 1987
- E. Management Directive 530.31, Workplace Safety and Health Program
- F. Pub 408 - Contractor Specification

4. Definitions

- A. Acceptable Atmospheres: Acceptable environmental conditions within confined spaces in which uncontrolled hazardous atmospheres are not present. This consists of, at a minimum:
 - (1) Oxygen (O₂) >19.5% and <23.5%
 - (2) Combustible Gas (COMB or Lower Explosive Limit [LEL]) <10%
 - (3) Carbon Monoxide (CO) <25 parts per million (ppm)
 - (4) Hydrogen Sulfide (H₂S) <10 ppm
- B. Acceptable Entry Conditions: Conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit required confined space entry can safely enter and work within the space.
- C. Attendant: An employee assigned as a standby person who is trained in nonentry emergency rescue and stationed outside one or more permit required confined spaces to communicate, observe and assist those inside. Attendants are not required for nonpermit required spaces.
- D. Alternate Procedures: These are procedures that may be undertaken for a space meeting the definition of a confined space AND where all the following conditions apply:
 - (1) It can be demonstrated that the ONLY hazard posed by the confined space is a potential hazardous atmosphere;
 - (2) Continuous natural or forced air ventilation alone is sufficient to maintain acceptable atmospheres during confined space operations; and
 - (3) Monitoring and inspection data are available and documented which support the items above.
- E. Authorized Entrant: An employee authorized by the employer to enter a permit required confined space to perform a specific type of duty.
- F. Blanking or Blinding: Absolute closure of a pipe, line or duct by fastening across its bore a solid plate or cap that completely covers the bore, extends at least to the outer edge of the flange, and can withstand maximum upstream pressure.
- G. Cataloger: Selected employees trained to conduct formal evaluations of confined spaces.
- H. Class II Chest Harness: Chest-waist harness used for side entry into confined spaces where only a limited fall hazard exists and where personnel retrieval may be necessary.
- I. Class III Full Body Harness: A full body harness used for top entry into confined spaces where a vertical free fall hazard exists and where personnel retrieval may be necessary.
- J. Confined Space: A space that has all the following characteristics:
 - (1) Large enough and so configured that an employee can bodily enter and perform assigned work.
 - (2) Limited or restricted means for entry or exit.

CLARIFICATION: When determining restricted entry and exit, consideration should be given to whether the path and time required to reach an area of safety would impede self-rescue or ability of rescue services to reach the employee in a timely manner.
 - (3) Not designed for continuous employee occupancy.

- K. Contaminant: Any organic or inorganic substance, dust, fume, mist, vapor, or gas, the presence of which in air can be harmful or hazardous to human beings.
- L. Double Block and Bleed: Closure of a line, duct or pipe by closing and locking or tagging a drain or vent which is open to the atmosphere in the line between two locked closed valves.
- M. Emergency: Any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.
- N. Engulfment: The surrounding, capturing, or both, of a person by a finely divided particulate matter or liquid that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.
- O. Entry: Ingress by persons into a permit required confined space which occurs upon breaking the plane of the confined space portal with any part of the entrant's body; and all periods of time in which the confined space is occupied.
- P. Entry Supervisor: The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required.
- Q. Hazardous Atmosphere: Hazardous atmosphere poses risk of death, incapacitation, impairment of self-rescue ability, injury or illness from:
 - (1) Flammable gas, vapor, or mist >10% LEL
 - (2) Combustible dusts exceeding its LEL (obscures vision at distance of five feet)
 - (3) Oxygen below 19.5% or above 23.5%
 - (4) Chemical/physical hazards exceeding Permissible Exposure Limits (PEL)
 - (5) IDLH (Immediately Dangerous to Life or Health) atmospheres
- R. Hoisting Device: A person rated hoist, winch, or similar mechanical device of specific design to permit an employee to safely enter and/or be removed through a top opening of a confined space.
- S. Hot Work: Work involving welding, burning, open flame, sparks or temperatures that could ignite combustible materials.
- T. Hot Work Permit: A written authorization issued for hot work operations.
- U. Immediately Dangerous to Life or Health (IDLH): Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space. Values established by NIOSH.
- V. Inerting: Displacing an atmosphere with a nonreactive gas (e.g., nitrogen or carbon dioxide) so that the resulting atmosphere is noncombustible.
- W. Isolation: A process of removing a confined space from service and preventing release of engulfing substances, or hazardous substances or energy. Isolation includes:
 - (1) Disconnection, removal or misalignment of lines
 - (2) Blanking or blinding at flanges
 - (3) Double block and bleed with valves
 - (4) Electrical lockout and tagout or disconnection; and
 - (5) Mechanical lockout and tagout or disconnection.
- X. Lockout/Tagout: Placement of a lock/tag on the energy generating device to isolate and prevent operation of the device.
- Y. Lower Explosive Limit (LEL): The minimum concentration of gas, vapor, or dust in air that can ignite in the presence of an ignition source.
- Z. Non-Permit Required Confined Space (NPRCS): A space meeting the definition of a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any atmospheric hazards, have the potential to contain any hazards capable of causing death or serious physical harm.

- AA. Oxygen Deficiency: Any atmosphere containing less than 19.5 percent oxygen by volume.
- BB. Oxygen Enriched Atmosphere: An atmosphere containing more than 23.5 percent oxygen by volume.
- CC. Permissible Exposure Limit (PEL): OSHA has published permissible exposure limits concerning various toxic and hazardous chemical substances and physical agents to which employees may be exposed during employment without developing any adverse health effects.
- DD. Permit Required Confined Space (PRCS): A space that meets all the requirements of a confined space AND that potentially has ANY one or more of the following characteristics:
- (1) Contains or has a potential to contain a hazardous atmosphere;
 - (2) Contains a material with the potential for engulfment of an entrant/employee to safely enter and/or be removed through a top opening of a confined space.
 - (3) Has internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or a floor which slopes downward and tapers to a smaller cross section;
 - (4) Contains any other recognized serious safety or health hazard.
- EE. PRCS Program: Program for preventing unauthorized employee entry and for ensuring safe entry into and work within confined spaces by Authorized Entrants.
- FF. Reclassified Space: A space classified as a permit required confined space that does not contain actual or potential atmospheric hazards and has had all remaining hazards removed.
- GG. Retrieval Devices: Equipment used for nonentry rescue of persons from confined spaces consisting of the following items:
- (1) Cable, line, or rope of at least ½ inch diameter and capable of withstanding 2000 pounds test. The line shall be equipped with fittings for attachment to a safety harness and shall be of a length that permits attachment to a hoisting device, or to an anchor point located outside the entry portal to the confined space;
 - (2) A hoisting device, winch, or similar mechanical device of specific design for use to permit an employee to safely enter and/or be removed through a top opening of a confined space; and
 - (3) Class II Chest Harness used for side entry into confined spaces where only a limited fall hazard exists and where personnel retrieval may be necessary; or
 - (4) Class III Full Body Harness used for top entry into confined spaces where a vertical free fall hazard exists and where personnel retrieval may be necessary.
 - (5) Wristlets and anklets may be utilized where it is determined by the entry supervisor that the use of a harness would create an additional hazard to the entrant due to space configuration.
- HH. Retrieval Line: A cable, line, or a rope of at least ½ inch diameter and capable of withstanding 2000 pounds test. The line shall be equipped with fittings for attachment to a safety harness and shall be of a length that permits attachment to a hoisting device, or to an anchor point located outside the entry portal to the confined space.
- II. Short Term Exposure Limits (STEL): OSHA has published short term exposure limits concerning various toxic and hazardous chemical substances and physical agents to which employees may be exposed for 15 minutes without developing any adverse health effects.
- JJ. Threshold Limit Value (TLV): The American Conference of Governmental Industrial Hygienists has established recommended threshold limit values (TLVs) concerning chemical substances and physical agents to which employees may be exposed during employment. TLVs shall be used as guidelines only, and shall be considered as one of many contributing factors in evaluating the overall degree of hazard for confined space work.

5. Forms

A. Confined Space Request for Classification Form (P-19)

This form may be completed and submitted by any employee to initiate the evaluation and classification process for a confined space that an employee will need to enter.

B. Potential Confined Space Identification and Classification Form (P-22)

This form is completed by a cataloger to document the outcomes of a series of simple tests to determine and document the classification of a space.

- (1) The first test verifies if the space is a confined space. For a space to be considered a confined space, it must meet the definition of a confined space as outlined in the definition section of this procedure.
 - (2) The second test determines if the space is a PRCS.
 - a. To be a PRCS, the space must possess any ONE of the following characteristics:
 - I. An actual or potential hazardous atmosphere such as oxygen deficient or oxygen enriched, flammable gases or vapors, or toxic air contaminants at levels exceeding OSHA established permissible exposure limits (PEL) (i.e., boilers, ductwork, sewers).
 - II. Poses a potential for engulfment by liquids or finely divided solids that can surround an entrant or be aspirated into the lungs.
 - III. Has inwardly converging walls that taper to a smaller cross sectional area that could trap an entrant (i.e., cone shaped hoppers, bins or tanks, cyclones).
 - IV. Presents any other serious health or safety hazard such as unguarded mechanical equipment, energized conductors, temperature extremes or hazardous radiation (i.e. press ovens).
 - b. Non-permit required confined spaces are those that don't present any of the above mentioned hazards that could cause death or serious harm (i.e. drop ceilings, mechanical cabinets, and some building crawl spaces).
 - (3) The third test determines if the PRCS can be entered using Alternate Procedures.
 - a. If the space is a PRCS, but the only hazards are either actual or potential atmospheric hazards, and the atmosphere can be maintained in the acceptable range through natural or forced air ventilation, then the space can be entered using Alternate Procedures.
 - b. To enter the space, the ventilation must maintain an acceptable atmosphere ($O_2 > 19.5\%$ and $< 23.5\%$, $CO_2 < 10\%$, $CO < 25$ ppm, and $H_2S < 10$ ppm) as determined by air monitoring.
 - (4) The fourth test determines if the PRCS can be reclassified as a non-permit required confined space.
 - a. If the space is a permit required confined space and the only hazards associated with the space are physical and/or mechanical, the space can be reclassified as a NPRCS if all the hazards can be eliminated without entering the space.
 - b. The space must not contain an actual or the potential for a hazardous atmosphere to be reclassified, and all other hazards must be fully eliminated.
- ### C. Confined Space Entry Permit (P-20)
- A permit form authorizing entry and work in a confined space, which states the type of work, air test results, entry requirements, and protective measures. This document is signed by an entry supervisor and is required to be posted at the entrance of the space during such work. This form authorizes entry into a PRCS by documenting compliance with applicable regulations, including the items listed below:
- (1) Atmospheric tester's initials or signature
 - (2) The confined space to be entered

- (3) The purpose of the entry
- (4) The date and authorized duration of the entry permit
- (5) The authorized entrants within the confined space, by name, roster, or other such tracking system, so that the attendant knows exactly who is within the confined space during the entire duration of the permit
- (6) Name(s) of attendant(s); name(s) of entry supervisor(s), with a space for the signature or initials of the entry supervisor who originally authorized the entry
- (7) The hazards of the confined space to be entered
- (8) The measures used to isolate the confined space and eliminate or control permit space hazards before entry (e.g. lockout/tagging of equipment, procedures for purging, inerting, ventilating, and flushing permit spaces, etc.)
- (9) Acceptable entry conditions; results of initial and periodic testing accompanied by the names or initials of the testers, and time that tests were performed
- (10) The rescue and emergency services that can be summoned and the equipment to use and numbers to call
- (11) The communication system used to maintain contact between authorized entrants and attendants during an entry operation
- (12) Equipment including personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment to be provided
- (13) Any other information necessary to ensure the safety of employees
- (14) Any additional permits which have been issued for the confined space, such as hot work permits.

D. Off-Site Rescue Initial Evaluation (P-21)

This form is used to document the initial evaluation of the services that are available through an off-site rescue and emergency services provider.

6. Confined Space Database

The confined space database was created in 2009, when an initial inventory was created with the assessment and classification for all identified confined spaces. This database is maintained and updated by the Employee Safety and Training Division. It is accessible by any employee on the shared drive in the following folder: <P:\PENNDOT SHARED\BHR EE SAFETY and TALENT DEVELOPMENT\Confined Space\Confined Space Database>

7. Responsibilities:

A. Employee Safety and Training Division

- (1) Establishes PennDOT policy and guidance for implementing an effective confined space entry program.
- (2) Provide or coordinate technical guidance to PennDOT regarding confined space entry activities.
- (3) Maintain PennDOT's electronic confined space database and ensure its accessibility to PennDOT employees.
- (4) Ensure that the overall program effectiveness is evaluated annually.
- (5) Provide or coordinate appropriate training opportunities for employees commensurate with the employees' involvement with the confined space entry program.
- (6) Review this protocol and evaluate its effectiveness annually, and revise it when changes occur or as necessary.

- B. County Managers/Bureau Directors/District Executives
 - (1) Ensure that an appropriate number of employees within the county/bureau/district have been identified and trained to conduct evaluations of (catalog) potential confined spaces.
 - (2) Ensure that confined spaces are identified, evaluated, and cataloged prior to entry.
 - (3) Ensure that employees are trained to an appropriate level based on their expected level of interaction with confined spaces.
 - (4) Provide employees with the required and appropriate PPE and other safety equipment to ensure safe entry and work within confined spaces.
 - (5) Ensure that the contents of this protocol are effectively administered for employees in the county/bureau/district.
- C. District Safety Coordinators (DSC)
 - (1) Report any employee concerns to the correct party at the agency.
 - (2) Conduct annual review of the program's overall effectiveness and recommend modifications as deemed necessary.
 - (3) Be trained as a cataloger.
 - (4) Oversee the space identification/classification process within the district.
 - (5) Ensure training is provided to catalogers.
 - (6) Provide timely follow-up to employee concerns.
 - (7) Review the confined space entry program with employee involvement on an annual basis.
 - (8) Retain and maintain program documentation (per documentation section of this program).
 - (9) Coordinate emergency response activities if required and authorized.
- D. Catalogers
 - (1) Conduct confined space assessment for all new or significantly modified spaces to determine if they are permit required confined spaces.
 - (2) Determine if permit required confined spaces can be reclassified or entered using alternate procedures.
 - (3) Provide the information gathered during the space assessment to the DSC for entry into the confined space database maintained by the Employee Safety and Training Division.
 - (4) Assist in identifying ways to minimize the need for permit required confined space entry.
- E. Supervisors/Managers, Construction
 - (1) Ensure construction contractors are aware of their requirements related to confined spaces prior to PennDOT employees entering a confined space on the project site.
 - (2) Ensure that employees entering potential confined spaces have coordinated the entries with the construction contractor.
 - (3) Ensure that PennDOT employees are aware of the procedures provided in the Project Office Manual (POM) related to confined space entry.
- F. Supervisors and Managers, Nonconstruction
 - (1) Complete and forward the Confined Space Request for Classification Form (P-19) to the county manager/DSC.
 - (2) Ensure that employees follow the confined space entry program and receive proper training.
 - (3) Attend necessary training to ensure understanding and proper implementation of PennDOT's confined space entry program.
 - (4) Identify the classification of a space prior to entering or having employees enter the space using the confined space database.

- (5) Ensure all precautions related to the classification of a space have been taken prior to entry in the space.
- (6) Ensure the proper equipment is available for entry into spaces, including air monitoring equipment.
- (7) If a PRCS will be entered, establish a process to ensure that the confined space program elements are being performed, including:
 - a. Ensuring the successful completion of the required training for entrant(s), attendant(s), and supervisor(s).
 - b. Ensuring that all pre-entry conditions are met and entry permits are reviewed prior to entry.
 - c. Ensuring that no unauthorized employee(s) enter a PRCS.
 - d. Ensure the confined space entry permit is completed and maintained at the worksite during confined space entry operations.
- (8) Coordinate with contractors to ensure proper procedures are being followed per this program.
- (9) Assist in determining whether PennDOT or contractors perform PRCS entry.
- (10) Seek to identify ways to minimize the need for PRCS entry.

G. Employees

- (1) Refrain from entering a PRCS unless they have been specifically trained and authorized for entry into that space.
- (2) Refrain from entering a confined space that has not been evaluated and cataloged.
- (3) If entry into a confined space will be necessary, notify the supervisor or manager promptly, and complete/submit the Confined Space Request for Classification Form (P-19).
- (4) Attend training commensurate with their involvement with the Confined Space Entry Program.
- (5) Notify the supervisor or manager immediately of their training needs, if asked to enter a PRCS before receiving the required training.
- (6) Notify the supervisor and/or cataloger, if they have ANY safety concerns or notice any unsecured PRCS.
- (7) Comply with all applicable requirements of PennDOT's Confined Space Entry Program.

8. Procedures

A. Identify Potential Confined Spaces

Prior to entry into a confined space, it must be evaluated and classified. If a confined space has not been classified, the employee should complete the P-19 form and submit it to the supervisor or manager. The supervisor or manager will forward the request to the DSC, who will arrange to have a trained cataloger evaluate the space.

B. Classify the Confined Space

An initial evaluation shall be performed in writing for each identified space using the Potential Confined Space Identification and Classification Form (P-22).

- (1) Confined space catalogers in each district will be responsible for evaluating and classifying each space to determine which one of the following applies:
 - a. It is not a PRCS.
 - b. It is a PRCS that can be reclassified.
 - c. It is a PRCS that can be entered using alternate procedures.
 - d. It is a PRCS requiring full program implementation.

- (2) Once the space has been evaluated by a cataloger, the completed P-22 will be forwarded to the DSC. The DSC will:
 - a. Review the P-22 to ensure it is completed properly and forward it to the Employee Safety and Training Division for entry into the confined space database.
 - b. Ensure a copy of the P-22 is filed with all other documentation regarding the space, for future reference.
 - (3) The P-22 for each confined space will be retained as long as that space exists.
 - (4) A re-evaluation is required for any previously evaluated confined space when a significant change in characteristic(s) occurs. When a space evaluation is updated/revise, it shall be retained with the original evaluation for the duration of the existence of that space.
- C. If the space is determined to be a NPRCS, employees may enter the space and only need to monitor the space for any changes in conditions that might warrant re-evaluation.
- D. If the space is determined to be a PRCS, determine if it can be reclassified or entered using Alternate Entry Procedures.
- (1) If the space does not contain actual or potential atmospheric hazards, and all other hazards can be eliminated without entering the space, then the space can be reclassified as an NPRCS.
 - a. To reclassify the space, a specific procedure must be developed that identifies the steps and actions to be taken to eliminate the hazards. This should be documented in the "comments" section of the P-22.
 - b. For spaces that have hazards that will not change between entries, this procedure can be developed.
 - c. If the hazards of the space can change between entries, this reclassification should be done each time the space is entered.
 - d. Examples of spaces that can be reclassified include hoppers, cement mixing trucks, water silos and tanks.
 - e. Once a space has been reclassified as an NPRCS, it can be entered without the use of a written permit, without the need for rescue services immediately available, and without the need for an attendant.
 - (2) If the only hazards are actual or potential atmospheric hazards, these hazards can be controlled by natural or forced air ventilation, and there are no other physical hazards, the space can be entered using Alternate Entry Procedures, as follows:
 - a. The atmosphere of the space must be initially monitored from outside of the space each time the space is entered, using a calibrated air monitor. Monitoring must be done at various levels/heights within the space to ensure gases with high or low vapor density are detected.
 - b. If a hazardous atmosphere is detected as defined in Section 4 of this protocol, the space must be ventilated from outside of the space, either by natural air movement or by mechanical forced air blowers.
 - c. If, after ventilating the space, the internal atmosphere is not hazardous, the space can be entered without the use of a written permit, and without the immediate availability of rescue services.
 - d. While entering a space using Alternate Entry Procedures, the entrant must wear an atmospheric monitor at all times. If the monitor indicates a hazardous atmosphere at any time during the entry, the entrants must immediately exit the space and terminate the entry. The space must be re-evaluated before it can be entered again.
 - e. If, after ventilating the space, the internal atmosphere remains hazardous, Alternate Entry Procedures cannot be used to enter the space. The full entry permit system must be used.

- E. If a PRCS cannot be reclassified or entered using Alternate Entry Procedures, then the Confined Space Entry Permit (P-20) is required as described in the next section.

9. Full PRCS Procedures

If a PRCS cannot be reclassified or entered using Alternate Entry Procedures, then the P-20 form is required and may be obtained as described in this section.

- A. Submit the completed form P-20 and any other documentation regarding the PRCS to the Employee Safety and Training Division.
- B. The Employee Safety and Training Division will conduct a cost analysis for presentation to the Deputies for Administration and Highway Administration.
- C. The Deputies will determine if the space is to be entered by PennDOT employees.
- D. If approval is given to enter the space, appropriate equipment will be purchased and additional training for those employees involved will be provided.
- E. The following procedures must be performed to verify that acceptable entry conditions exist before a P-20 form can be issued and entry into a PRCS can be authorized.

- (1) Prior to space entry, a safety meeting must be conducted with employees involved in the entry to review all the following:
 - a. The elements of the permit
 - b. Job specific information regarding the nature of the work to be performed
 - c. The potential hazards associated (including atmospheric conditions)
 - d. The correct use of required personal protective equipment and monitoring equipment
 - e. Emergency procedures shall be reviewed

- (2) All individuals who are to enter the confined space shall be currently qualified for confined space entry and respiratory protection

NOTE: Employees who are not currently qualified shall not be permitted to conduct confined space entry activities.

- (3) All pipe and lines shall be cleaned out and locked out prior to entry.
- (4) All electrical and mechanical equipment shall be disconnected and/or de-energized and locked/tagged out. Power supplies to pumps are to be shut off and the controls locked in the "OFF" position by means of padlocks. The entry supervisor will retain positive control of all padlock keys. Each electrical panel is to be tagged/labeled to indicate the reason why the panels are locked out.
- (5) Air monitoring will be conducted prior to and continuously throughout the entry. The atmosphere shall be checked in an area that would represent the breathing zones of the employees while performing work inside confined space. Measurements shall be taken and recorded for all the following:
 - a. Oxygen content
 - b. No entry shall be made if the oxygen concentration is less than 19.5% without approved supplied air respirators. No entry shall be made if the oxygen content is greater than 23.5% by volume.
 - c. Flammability level
 - d. No entry shall be made if the level is greater than 10% of the LEL
 - e. Other air contaminants
 - f. No entry shall be made if the level(s) is above IDLH. Air contaminants above PELs but below IDLH will require use of respiratory protection for entry.

- (6) The entrance to the confined space shall be maintained free of obstructions, debris and/or other conditions that prevent ready entry into and exit from the confined space.
- (7) Confined spaces with both side and top openings shall be entered from side openings when practical.
- (8) At least one attendant shall be stationed at the entrance to the confined space.
NOTE: The attendant(s) shall have some means to summon medical or other emergency assistance without leaving the confined space entrance.
- (9) A minimum of one additional employee who may have other assigned duties must be immediately available within sight or call of the attendant to help in case of an emergency. This additional employee must also be trained as an authorized attendant.
- (10) Communication shall be maintained between the attendant and authorized entrants in the confined space; radio or retrieval line signals must be used when authorized entrants are out of sight of the attendant; affected employees shall be trained in the use of the communication system which shall be tested before each use.
- (11) When entering confined spaces which previously contained flammable or combustible materials, all the following ADDITIONAL requirements to ensure a safe entry shall apply:
 - a. No hot work or ignition sources shall be allowed in or adjacent to the confined space (**If hot work must be performed, contact the DSC for further guidelines.)
 - b. All electrical equipment, including lighting shall be explosion proof and safe for use in Class I, Division II atmospheres
 - c. All air monitoring equipment shall be intrinsically safe for use in Class I, Division II atmospheres
 - d. Ground fault circuit interrupters shall be used as appropriate
 - e. Nonsparking tools shall be used
- (12) The availability of a rescue team shall be verified as able to respond within a four minute response time or must be stationed on site (See Section IV, C for specifications on Rescue Services).
- (13) Isolation of a confined space shall be performed to prevent the release of hazardous substances or energy into the space and prevent unauthorized entry:
 - a. Spaces containing flammable, toxic, corrosive, irritating or engulfing liquids or solids must be emptied, flushed or otherwise purged from the space whenever possible
 - b. Pipes or hoses conveying flammable, toxic, incapacitating or engulfing substances must be disconnected, blanked, or double blocked and bled
 - c. Mechanical or electrical equipment that could force substances into a confined space or injure workers in the space if energized, must be disconnected or de-energized and locked/tagged out
 - d. Appropriate warning signs and barriers shall be posted at the entrances to confined spaces to protect employees. Signs and barriers shall be removed only after the operation is completed and the confined space is secured
- (14) If ventilation is required during confined space work to minimize concentrations of air contaminants and to maintain the oxygen content at safe levels in the confined space, all of the following ADDITIONAL considerations must be made:
 - a. Confined spaces shall be ventilated prior to entry and during occupancy.
 - b. Whenever a ventilation system is employed, the system shall be evaluated before and during each work shift to ensure that it is functioning properly and that acceptable atmospheres are maintained.
 - c. The physical properties of the contaminants within the confined space and the configuration of the confined space shall be considered in determining the ventilation technique to be employed.

- d. Only explosion proof air movers shall be used to ventilate confined spaces.
 - e. Whenever possible, air movers shall be used with ducting to increase the efficiency of the ventilation system in the confined space and to prevent recirculation of contaminated air due to ventilation "short circuiting."
 - f. When ventilating confined spaces previously containing flammable or combustible products, ventilation equipment shall be bonded or grounded to prevent the build-up and release of static electricity.
- (15) Monitoring for oxygen content, flammable gases or vapors and potential toxic contaminants shall be performed continuously, and documented periodically on the entry permit to ensure that changes in atmospheric conditions are identified and workers are adequately protected. Air monitoring instruments that shall be used include: combustible gas indicators, oxygen indicators, organic vapor analyzers, and other direct reading air contaminant measuring devices.
- (16) When preparing to enter a PRCS, the following air testing requirements shall apply:
- a. A person with adequate knowledge and training shall perform appropriate confined space testing.
 - b. Instruments shall be calibrated and maintained according to manufacturer requirements.
 - c. Initial air testing of the confined space shall be made from outside of the confined space. Initial testing of the confined space shall be completed with mechanical ventilation equipment off so that "worst case" conditions can be assessed.
 - d. All air testing results shall be recorded on the entry permit.
 - e. If the configuration of the confined space prevents initial testing from outside, entry shall not be made until authorization is obtained from the DSC.
- (17) In addition to atmospheric testing, positive steps shall be taken to ensure that employees are protected from physical hazards in the PRCS, which include but are not limited to the following:
- a. Discharge of steam, high pressure air, water or oil into the confined space, or failure of confined space structural support members
 - b. Falling objects
 - c. Openings and elevated work areas from which persons may fall
 - d. Hoses, pipes, tools, or equipment posing trip and fall hazards
 - e. Wet or oily surfaces posing slip hazards
 - f. Inadequate lighting
 - g. Insufficient or faulty personal protective equipment
 - h. Insufficient or faulty equipment or tools
 - i. Noise in excess of permissible levels
 - j. Temperature extremes that could cause heat or cold stress
 - k. Electrical shock due to faulty wiring or improper grounding procedures (GFCI protected circuits must be used when electrical equipment is used in a potentially wet environment or outside.)
- (18) Selection and use of personal protective and safety equipment shall be determined by the DSC. Selection of such equipment is based on the following conditions:
- a. Specific work activities of personnel inside the confined space
 - b. Type of chemical residues inside the confined space

- c. Actual or potential for development of dangerous air contamination and/or oxygen deficiency
 - d. Potential physical hazards associated with the confined space
- (19) The personal protective and safety equipment that may be required include:
- a. Eye and face protection - safety glasses, chemical goggles, face shields or full face respirators
 - b. Head protection - hard hats
 - c. Body protection - chemical resistant coveralls, suits, and aprons; foot protection; respiratory protection - air-purifying respirators, supplied air-line respirators, escape packs, and self-contained breathing apparatus; hearing protection - ear plugs and ear muffs
 - d. Retrieval devices - Class II chest harness and Class III full body harness, wristlets, retrieval line, hoisting device (person rated top entry extraction winch or hoist); fall protection - chest harness, full body harness and lanyard
 - e. Warning devices - barricades, signs, caution tape and cones
 - f. Other equipment - first aid kit, eye wash, emergency shower, fire extinguisher, lighting equipment, and ladders
- F. Upon successful completion of the full entry permit procedures described above, obtain the Confined Space Entry Permit (P-20).
- (1) The P-20 authorizes entry into a confined space with a hazardous atmosphere and documents compliance with applicable regulations.
 - (2) The P-20 must be completed prior to entry into any identified PRCS.
 - (3) The P-20 must be posted at the entry to the space, or otherwise available for inspection by all authorized entrants, so that they may confirm all pre-entry preparations have been made.
 - (4) The entry supervisor shall sign the permit thus allowing the entry operation to begin.
 - (5) The duration of the P-20 shall not exceed the time required to complete the job or task specified on the permit.
- G. Follow these PRCS entry procedures:
- (1) Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed.
 - (2) When entrance covers are removed, the opening shall be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.
 - (3) The entry supervisor will coordinate any joint entries made with outside contractors to ensure this procedure is understood and followed by all involved parties.
 - (4) Prior to each entry into a space where the potential for a hazardous atmosphere exists, the internal atmosphere shall be tested and documented.
- H. If there is any work to be performed while in the PRCS, the following requirements apply:
- (1) The information on the P-20 and P-22 must be made available to each employee who enters the confined space.
 - (2) All PPE deemed necessary shall be available and utilized by the entrant(s).
 - (3) When appropriate, continuous forced air ventilation shall be directed to ventilate the immediate areas where an employee is or will be present within the confined space, and shall continue until all employees have left the confined space.
 - (4) The air supply for the forced air ventilation shall be from a clean source and shall not increase the hazards.

- (5) If a hazardous atmosphere is detected during entry, the following requirements apply:
 - a. Each employee shall leave the confined space immediately.
 - b. The confined space shall be evaluated to determine how the hazardous atmosphere developed.
 - c. Measures shall be taken to eliminate the hazardous atmosphere before any subsequent entry takes place.
- I. Terminate entry and cancel the P-20, as follows:
 - (1) The entry supervisor shall terminate the entry and cancel the entry permit if the operations covered by the entry permit have been completed or a condition not allowed under the entry permit arises in or near the confined space.
 - (2) The entry supervisor shall sign off to cancel an entry permit only after it is confirmed that the space has been properly secured and covered to prevent unauthorized access.
 - (3) If entry into the space is needed after the space has been closed and the permit has been cancelled, a new permit must be completed and authorized by the entry supervisor.
 - (4) Completed and cancelled permits will be forwarded to the DSC, who will in turn, forward them to the Employee Safety and Training Division.

10. Full PRCs Responsibilities

- A. Authorized Attendant
 - (1) Know the hazards, including information on the mode of exposure (e.g., inhalation or dermal absorption), signs or symptoms, and consequences of the exposure.
 - (2) Be aware of possible behavioral effects in entrants due to exposure.
 - (3) Always know the number and identity of entrants in the space.
 - (4) Remain outside the space until relieved by another attendant.
 - (5) Maintain communication with entrants throughout the entry.
 - (6) Monitor activities inside and outside space to determine whether it is safe for entrants to remain in the space.
 - (7) Perform air monitoring and surveillance of the confined space prior to and during entry into a confined space.
 - (8) Evacuate the space if any of the following are detected:
 - a. A prohibited condition
 - b. Behavioral effects in entrants due to hazard exposure
 - c. A situation outside the space which could endanger entrants
 - d. The authorized attendant cannot adequately perform their responsibilities
 - (9) Summon rescue/emergency services if entrants may need assistance to escape.
 - (10) While entry is underway:
 - a. Warn unauthorized persons to stay away from space;
 - b. Advise them to exit immediately if they have entered the permit space; and
 - c. Inform entrants and entry supervisor if unauthorized persons have entered the space.
 - (11) Perform non-permitted rescues as specified by rescue procedure.
 - (12) Perform no duties that may interfere with the primary duty of monitoring and protecting authorized entrants; and
 - (13) Never enter a permit space to attempt a rescue.

B. Entry Supervisor

- (1) Know the hazards, including information on the mode of exposure (e.g., inhalation or dermal absorption), signs or symptoms, and consequences of the exposure.
- (2) Verify appropriate entries have been made on entry permit, all tests have been conducted, all pre-entry conditions have been met and all procedures/equipment specified by permit are in place before endorsing permit and authorizing entry.
- (3) Terminate entry and cancel permit when tasks are completed or when a condition not allowed by the permit arises.
- (4) Issue and post a confined space entry permit and cancel the permit if a non-permitted condition develops.
- (5) Verify the availability and means of summoning rescue/emergency services.
- (6) Remove unauthorized individuals who enter or attempt to enter the space; and determine, whenever responsibility for entry is transferred that operations remain consistent with the terms of the permit and acceptable entry conditions are maintained.

C. Authorized Entrant

- (1) Know confined space hazards, including information on the mode of exposure (e.g., inhalation or dermal absorption), signs or symptoms, and consequences of the exposure.
- (2) Use appropriate personal protective equipment properly (e.g., face and eye protection, and other forms of barrier protection such as gloves, aprons, and coveralls).
- (3) Maintain communication (e.g., telephone, radio, visual observation) with attendants to enable the attendant to monitor the authorized entrant's status as well as to alert the authorized entrant to evacuate when applicable.
- (4) Alert the attendant whenever a warning sign or symptom of exposure to a dangerous situation exists or a prohibited condition is detected.
- (5) Exit from confined space as soon as possible when ordered by an authorized attendant/entry supervisor, when the authorized entrant recognizes the warning signs or symptoms of exposure exists, when a prohibited condition exists, or when an automatic alarm is activated.

11. Atmospheric Monitoring**A. Acceptable Results**

- (1) % Oxygen (O₂) (must be between 19.5% and 23.5%);
- (2) % LEL/COMB (must be less than 10% of LEL for flammable present);
- (3) Carbon Monoxide (CO) (must be less than 25 ppm);
- (4) Hydrogen Sulfide (H₂S) (must be less than 10 ppm); and
- (5) Any other identified potentially hazardous chemical must be measured in addition to the above and levels maintained below the established OSHA PEL and STEL through continuous forced ventilation.

B. Equipment Requirements

- (1) At a minimum, atmospheric monitors must be able to simultaneously monitor all the following:
 - a. % Oxygen (O₂)
 - b. % LEL
 - c. Carbon Monoxide (CO)
 - d. Hydrogen Sulfide (H₂S)
- (2) Bump Testing and Calibration
 - a. All atmospheric monitors will be bump tested before each use following the manufacturer's procedures.

- b. Each meter will also be bench calibrated with calibration gas standards at least every three months following the manufacturer's procedures.
 - c. Any monitoring equipment that cannot be accurately calibrated will be immediately removed from service and returned to the manufacturer for repair or replacement.
- C. History: PennDOT provided atmospheric monitoring equipment to each of the districts in 2009. The MSA Altair® 4 Gas Monitor (Model # 10085981) was purchased through WW Grainger. The internal sensors include percent oxygen (%O₂), percent lower explosive limit (%LEL or COMB), carbon monoxide in parts per million (CO ppm), and hydrogen sulfide in parts per million (H₂S ppm).

12. Contractors/Consultants

A. Maintenance and Bridge

Contractors/consultants used by Maintenance and Bridge to enter confined spaces shall be informed in advance of potential hazards associated with the confined space, if known, including any assessment or determinations made on the space. Contractors are required to follow the PRCS Standard as set by the US Occupational Safety and Health Administration (OSHA) in 29 CFR 1910.146. Contractors shall have and follow a written PRCS program and utilize their own entry permit. Both the contractor program and entry permit must be at least as stringent as those required by this procedure.

B. Construction

If construction employees will be entering confined spaces with contractor employees, the contractors will be responsible for ensuring the evaluation and controls of the spaces as detailed in the current Pub 408 (construction specifications for PennDOT projects). Construction employees will be provided information regarding the spaces from the contractors, and will be informed/trained by the contractor on the hazards of the space, and will be given the opportunity to observe any atmospheric monitoring. PennDOT and the contractor shall establish, prior to PRCS operations, who will serve as the rescue responder in an emergency and what system will be used to notify the responder that an emergency exists.

13. Training

A. Initial Training

The following courses shall be performed internally, prior to permitting or authorizing an employee to enter a confined space:

- (1) Confined Space Awareness training is required for employees who are not permitted to enter any confined space, and shall include the following elements:
 - a. The identification and classification of existing confined spaces; and
 - b. Clarification of the "No Entry Policy."
- (2) Confined Space training is required for employees who may enter any NPRCS or PRCS that has either been reclassified or can be entered using alternate procedures, and shall include the following elements:
 - a. Clarification of agency "No Entry Policy" regarding PRCS;
 - b. The hazards associated with confined spaces;
 - c. The characteristics of NPRCS and PRCS;
 - d. The identification and classification of confined spaces;
 - e. Methods to reclassifying PRCS to NPRCS, or to enter PRCS using Alternate Entry Procedures;
 - f. Responsibilities and duties of personnel;
 - g. Air monitoring/testing equipment use;

- h. PPE selection, use and requirements;
- i. Ventilation;
- j. Review of agency confined space written program; and
- k. General contractor requirements.

B. Refresher Training

Internal refresher training shall be performed under the following conditions:

- (1) When the annual review of program indicates there have been substantial changes to the program.
- (2) If an employee demonstrates that they did not fully understand the training and there are inadequacies in the employee's knowledge or use of these procedures as demonstrated by an occurrence of noncompliance with the program.
- (3) Refresher training for employees who will participate in rescue operations is required on an annual basis and shall be comprehensive. Refresher training must include practice entry rescue.

C. Full PRCS Training

Prior to entering PRCS, employees must receive training specific to their responsibilities under the program. Training could include aspects of the entrants' activities, the attendants' activities, and the entry supervisor's activities.

- (1) Full confined space program training is required for employees authorized to perform all PRCS entries. Initial training shall include all the following elements:
 - a. All training topics required in Section 13.A(2) above
 - b. Respiratory protection (if applicable)
 - c. Permit entry procedures
 - d. Signs and symptoms of chemical exposure
 - e. Methods to summon external rescue services
 - f. Duties and responsibilities of authorized entrants
 - g. Duties and responsibilities of attendants
 - h. Duties and responsibilities of entry supervisor
 - i. Duties and responsibilities of the rescue team
- (2) Internal Rescue Personnel must receive the above initial training plus all the following:
 - a. Methods to conduct entry rescue
 - b. Operation and use of rescue equipment
 - c. Limitations of rescue equipment
 - d. First aid and CPR
 - e. Specialized PPE including Self-Contained Breathing Apparatus (SCBA)

14. Communications

A. Warning Signs

A warning sign must be posted at the entrance to all PRCS reading "DANGER – Permit Required Confined Space, Do Not Enter" or similar language, to notify employees that entry into these spaces is dangerous and only authorized employees are permitted to enter.

B. Pub 684 (07-09) Understanding Confined Spaces

This pamphlet contains the following information, and is available and distributed to employees during confined space awareness training.

- (1) What is a confined space? Confined spaces have the following properties:
 - a. Large enough to bodily enter
 - b. Limited means of entry and exit
 - c. Not designed for continuous human occupancy
- (2) Some common examples of confined spaces include, but are not limited to:
 - a. Tanks
 - b. Sewers
 - c. Pits
 - d. Culverts
 - e. Pipelines
 - f. Pipes
 - g. Trenches deeper than four feet
 - h. Utility Vaults
 - i. Manholes
 - j. Bridge Box Beams
 - k. Sewage Digesters
- (3) PennDOT has four basic classifications of confined spaces:
 - a. Non-permit required Confined Spaces
These spaces meet the basic definition of a confined space, but do not have any additional recognized hazards. These spaces do not require any additional actions from PennDOT.
 - b. PRCs that can be Reclassified
These are PRCs that do not contain an actual or the potential to contain a hazardous atmosphere. The hazards of this type of space are physical or mechanical in nature, and must be addressed before entry into the space.
 - c. PRCs that can be entered using Alternate Entry Procedures
These are PRCs that contain an actual or the potential to contain a hazardous atmosphere. This would include low levels of oxygen or high levels of dangerous gases. These spaces cannot contain any physical or mechanical hazards, and the atmospheric hazards must be controlled by either natural or forced air ventilation. These spaces require continuous atmospheric monitoring.
 - d. Full PRCs
These are PRCs that cannot be reclassified or entered using alternate procedures. These spaces would have a combination of hazards or hazards that cannot be effectively controlled. Entering these spaces requires a confined space permit to be completed, rescue personnel to be readily available, and specialized training and equipment to enter.
- (4) Confined Space Permits
Spaces that have been classified as full permit required confined spaces would require, in addition to other things, a confined space permit to be completed prior to entry. These permits have been developed by PennDOT and would be completed by site supervisors. The permit acts as a checklist to ensure all the hazards of a space have been identified and proper controls are in place for these hazards.
- (5) Designing New Structures
When designing new structures, the structures shall be designed to avoid creating PRCs. This includes looking at entries to and exits from spaces and sources of fresh air.

(6) Entering Confined Spaces

To identify and catalog spaces, PennDOT has designated employees who are specifically trained to evaluate these spaces and to determine classification. These individuals will also determine any specific procedures that must be accomplished prior to the spaces being entered.

(7) Construction Activities

a. Most spaces associated with construction activities will be temporary. Transportation Construction Inspectors (TCIs) could be required to enter some of these temporary spaces to conduct inspections. Contractors are responsible for providing a confined space program to protect PennDOT employees from the hazards associated with the spaces.

b. Construction personnel must be familiar with the characteristics of a confined space, what must be done to safely enter these spaces, and how to ensure that the contractor has addressed these hazards before PennDOT employees enter them. If there are questions about the effectiveness of a contractor's program to protect PennDOT employees, the employees are to report the issues to their supervisor.

(8) Employees Entering Confined Spaces (Other than Construction Spaces)

a. PennDOT employees must routinely enter spaces that could be confined spaces. Prior to entering any site that could potentially be a confined space, the spaces must be classified. The classification will identify what precautions must be taken to enter these spaces safely. If the space has not been classified, notify your supervisor. They will arrange for a cataloger to inspect and classify the space.

b. Once the space has been classified, it can be entered if the proper procedures are followed.

15. Program Review

The effectiveness of this program in preventing accidents and injuries related to confined space entry will be evaluated annually with appropriate actions taken to address program deficiencies found. The review will be documented and kept on file for the current fiscal year and previous two fiscal years.

A. Review all Confined Space Entry Permits (P-20) within one year of each entry and revise this protocol as needed to ensure that employees are protected from the hazards.

B. A single annual review may be performed that covers all entries performed during a 12 month period. If no entry is performed during a 12 month period, no review is necessary.

C. This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

16. Recordkeeping

The following records will be maintained:

A. The completed Potential Confined Space Identification and Classification Form (P-22) for each confined space shall be maintained for the life of that space.

B. Employee training records and certifications shall be retained in the employee's training file (LSO) for the duration of employment in positions requiring such training.

C. If PRCS are entered, records relating to that entry must be maintained.

(1) Documentation of annual review of all PRCS permits (P-20) to determine continued program/permit effectiveness is required and shall be maintained for a period of three years from the date of the review.

(2) Documentation of confined space rescue equipment and PPE inspections (monthly and prior to each use) and maintenance per manufacturer recommendations shall be retained for a minimum of three years by the DSC.

- (3) Documentation of any agreement(s) made with outside rescue services to act as rescue team for confined space entries shall be maintained with the DSC for a minimum of three years.

NOTE: Documentation must include the Off-Site Rescue Initial Assessment (P-21) and the most recent performance evaluation if/when off-site rescue services are rendered.

- D. This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Topic
Intro, 1-13	PPIM 09-132 Confined Space Entry (Issued 12/23/09), PennDOT Confined Space Entry Procedures issued with the PPIM, and some original text based on current practices
14	Original per OSHA 1910.146(c)(2) Pub 684 (07-09) Understanding of Confined Spaces Pub 445 (10-13) Safety Policy Manual pages 25-26
16	Original based on AIPP requirements for Protocol 7
17	PennDOT Confined Space Entry Procedures issued with PPIM 09-132 Original, based on AIPP requirements for Protocol 7

Protocol 8 – Fire Prevention and Control

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It is the policy of PennDOT to provide its employees with a safe and healthy work environment. The guidelines set forth in this protocol are designed to help reduce potential exposure of employees to fire and property damage. The protocol shall be updated as necessary to reflect changes in workplace conditions.

1. Policy

This protocol affects all PennDOT employees including those who work with or around flammable and combustible materials or engage in hot work activities. Employees are expected to comply with all elements of the PennDOT Fire Prevention and Control protocol. Employees who do not comply with this protocol may be subject to disciplinary action up to and including termination.

The purpose of this Fire Prevention and Control protocol is to provide PennDOT employees with the safety requirements necessary to assure the safety of PennDOT employees and visitors from the various hazards associated with fire. Information is provided for the prevention of fires from occurring (Fire Prevention), and the proper methods for responding to fires once they have started (Fire Control).

2. Applicable Standards

- A. OSHA 1910.101-120, Hazardous Materials
- B. OSHA 1910.251-255, Welding Cutting and Brazing
- C. PA MD 720.5 Energy Conservation and Electrical Devices in Commonwealth Owned and Leased Buildings
- D. PA DOH Clean Indoor Air Act
- E. NFPA 10: Standard for Portable Fire Extinguishers
- F. NFPA 25: Standard for Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems
- G. NFPA 72: National Fire Alarm and Signaling Code

- H. NFPA 80: Standard for Fire Doors and Other Opening Protectives
- I. NFPA 110: Standard for Emergency and Standby Power Systems
- J. Manufacturer recommendations

3. Responsibilities

- A. Employee Safety and Training Division/District Safety Coordinators
 - (1) Administer, audit annually and maintain this protocol.
 - (2) Ensure resources are provided to conduct training in accordance with this protocol.
 - (3) Evaluate operations and areas for compliance using the fire prevention and control checklists found in Appendix A of this protocol, if necessary.
- B. District Executives/Division Chiefs
 - (1) Ensure all affected employees are provided the resources and training as outlined in this protocol.
 - (2) Understand the requirements of this protocol.
 - (3) Review the annual audit of this protocol and implement necessary recommendations.
- C. Managers/Supervisors
 - (1) Ensure all employees requiring training for this protocol attend.
 - (2) Conduct inspections in accordance with this protocol.
 - (3) Ensure hot work permits are completed prior to beginning work in accordance with Protocol 25 Welding and Cutting (Hot Work).
 - (4) Ensure fire extinguishers are inspected on a monthly basis.
 - (5) Evaluate operations and areas for compliance using the fire prevention and control checklists found in Appendix A of this protocol, if necessary.
- D. Employees
 - (1) Ensure employees and contractors are following the proper procedures for hot work in accordance with Protocol 25 Welding and Cutting (Hot Work).
 - (2) Attend and participate in training as it relates to this protocol.
 - (3) Ensure hot work permits are authorized prior to beginning work in accordance with Protocol 25 Welding and Cutting (Hot Work).

4. Definitions

- A. Authority Having Jurisdiction (AHJ): An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.
- B. Authorized Personnel: Includes employees or contractors who are trained to perform hot work activities.
- C. Combustible Liquid: Any liquid having a flashpoint at or above 100 deg. F. (37.8 deg. C.)
Combustible liquids shall be divided into two classes as follows:
 - (1) Class II Liquids: Any liquids with flashpoints at or above 100 deg. F. (37.8 deg. C.) and below 140 deg. F. (60 deg. C.), except any mixture having components with flashpoints of 200 deg. F. (93.3 deg. C.) or higher, the volume of which make up 99 percent or more of the total volume of the mixture.

- (2) Class III Liquids: Any liquids with flashpoints at or above 140 deg. F. (60 deg. C.) Class III liquids are subdivided into two subclasses:
 - a. Class IIIA Liquids: Any liquids having flashpoints at or above 140 deg. F. (60 deg. C.) and below 200 deg. F. (93.3 deg. C.) except any mixture having components with flashpoints of 200 deg. F. (93.3 deg. C.), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.
 - b. Class IIIB Liquids: Any liquids having flashpoints at or above 200 deg. F. (93.3 deg. C.).
 - (3) This section does not cover Class IIIB liquids. Where the term "Class III liquids" is used in this section, it shall mean only Class IIIA liquids. When a combustible liquid is heated for use to within 30 deg. F. (16.7 deg. C.) of its flashpoint, it shall be handled in accordance with the requirements for the next lower class of liquids.
- D. Flammable Liquid: Any liquid having a flashpoint below 100 deg. F. (37.8 deg. C.), except any mixture having components with flashpoints of 100 deg. F. (37.8 deg. C.) or higher, the total of which make up 99 percent or more of the total volume of the mixture. Flammable liquids shall be known as Class I liquids. Class I liquids are divided into three classes as follows:
- (1) Class IA Liquids: Any liquids having flashpoints below 73 deg. F. (22.8 deg. C.) and having a boiling point below 100 deg. F. (37.8 deg. C.).
 - (2) Class IB Liquids: Any liquids having flashpoints below 73 deg. F. (22.8 deg. C.) and having a boiling point at or above 100 deg. F. (37.8 deg. C.).
 - (3) Class IC Liquids: Any liquids having flashpoints at or above 73 deg. F. (22.8 deg. C.) and below 100 deg. F. (37.8 deg. C.).
- E. Hot Work: Any flame or spark producing operation. Examples may include but are not limited to: flame cutting, welding, brazing, flame soldering, grinding/cutting with any portable spark producing equipment, thermal spraying, pipe thawing, torch applied roofing, or any other similar flame or spark producing operations.

5. Common Hazards and Control Methods

A. Heat

- (1) An adequate clearance of three feet or greater will be maintained between heating equipment and combustible materials. Refer to the corresponding Safety Data Sheet (SDS) for storage requirements.
- (2) Portable liquid fuel or gas-fired heaters will not be used inside buildings.

B. Electrical

- (1) Defective electric cords, lighting fixtures, appliances and switches will be repaired or removed.
- (2) All defective electrical equipment will be reported immediately and repaired by authorized electricians.
- (3) Electrical appliances and devices will bear the label of, or be listed by, Underwriters Laboratories, Inc. (UL) and/or Electrical Testing Laboratories (ETL/LITON).
- (4) All electrical appliances and devices will be in compliance with Management Directive 720.5 "Energy Conservation and Electrical Devices in Commonwealth Owned and Leased Buildings."
- (5) No device will be installed which will interfere with the normal operation of a circuit breaker or fuse.
- (6) Whenever a tripped breaker or blown fuse has interrupted a circuit, the source of the disturbance will be located and eliminated before restoring power to the interrupted circuit.
- (7) All electric switches, circuit breakers and fuses in light and power panels will be correctly labeled to indicate the circuits or devices they control.

- (8) Extension cords will not be used in lieu of permanent wiring.
- (9) Extension cords used in wet environments will have either a built in GFCI or a GFCI device attached to the cord at its electrical source.

C. Smoking

- (1) Smoking activities must comply with PA Department of Health Clean Indoor Air Act (CIAA) and PennDOT policy.

D. Trash and Debris

- (1) Working and storage areas will be monitored regularly to reduce accumulation of fire hazards.
- (2) Dumpster units and other central trash disposal units will be located at least 15 feet from any building.
- (3) Combustible janitorial supplies such as rags and paper will not be stored near possible sources of ignition, including steam pipes and high wattage lamp bulbs.
- (4) Contents of ashtrays and other receptacles for smoking materials will not be emptied into wastebaskets or other wastepaper containers.
- (5) Combustible materials will not be placed on radiators, heaters, or steam pipes.

6. Flammable and Combustible Liquids

Flammable liquids must be stored properly to prevent fires or to limit the potential damage if a fire occurs. Refer to 29 CFR 1910.106 for storage requirements and limits.

A. Storage of Flammables and Combustibles Inside Buildings

The following guidelines shall be followed for the storage of flammable and combustible liquids inside buildings:

- (1) A maximum of 120 gallons of Class IB, Class IC, Class II or Class III liquids may be stored inside one fire area of a maintenance building or shop and outside of a flammable storage cabinet or designated storage room.
 - a. Such materials should not be stored in office buildings, except for the materials that are necessary for the operation of the building.
 - b. Quantities in excess of 120 gallons must be stored inside a flammable storage cabinet or inside a designated storage room. Refer to 29 CFR 1910.106 for the requirements of storage rooms.
- (2) Liquids must be stored in metal cans, safety cans or drums.
- (3) The containers must be labeled according to Hazard Communication Requirements. Class IB liquids may be stored in safety cans or metal cans of 5 gallon capacity or less.
- (4) No more than one quart of a Class IB liquid may be stored in approved plastic containers.
- (5) The storage area must be kept free of trash and other combustible materials.
- (6) Aisles and access to the storage areas must be kept free of stored materials.
- (7) Class IB, Class IC, Class II or Class III liquids should not be stored inside the basement of any building.
- (8) A fire extinguisher must be placed no less than 10 feet and no more than 25 feet from a Class I or Class II storage area.
- (9) No smoking signs shall be posted in Class I and Class II storage areas such as garages and fueling stations.

B. Storage of Flammables and Combustibles in Outside Storage Areas

The following guidelines shall be followed for the storage of flammable and combustible liquids outside buildings:

- (1) Fuel oil and gasoline tanks in outside aboveground storage areas shall be diked to capacity using concrete curbs or other enclosures.
- (2) Tanks shall be protected from vehicle damage by barriers or high curbs.
- (3) There shall be no combustible materials, empty or full drums or barrels inside the barricaded area.
- (4) The distance between flammable or combustible storage tanks shall be at least three feet.
- (5) There shall be a clear zone around tanks and the zone shall be free of weeds, trash, and other combustible materials.
- (6) Liquid petroleum gas (LPG) tanks shall be placed at least 20 feet from flammable or combustible storage tanks.
- (7) Class I liquids may only be dispensed when the nozzle from the tank and the container are electrically connected.
- (8) Smoking shall be prohibited within 50 feet of fuel storage areas.

7. Special Hazards and Control Methods**A. Fueling Operations**

- (1) Only authorized and properly trained personnel will be permitted to operate major fueling equipment.
- (2) Knowledge of the equipment hazards involved and possession of the regulations for handling flammable liquid will be required.
- (3) Operators must be familiar with the nearest telephone and/or fire alarm box, how to call the fire department and the location and operation of fire extinguishers.
- (4) Operators of vehicles and mobile equipment will turn off engine, lights, and other electronic devices, such as cell phones, before commencing fueling.
- (5) Flammable liquid containers found to be leaking will be reported immediately to the Foreman or Garage Supervisor for proper containment, cleanup, handling, and disposal.
- (6) Requirements/warnings for the prevention of static electrical discharge during fueling operations shall be posted conspicuously in the vicinity of the fuel pumps.

B. Hazardous Chemicals

- (1) The handling of hazardous chemicals shall only be performed by personnel properly trained in the potential hazards and characteristics of the specific material involved.
- (2) These personnel shall be duly authorized by the appropriate authority to perform such work.
- (3) Incompatible chemicals and compounds will be kept separated and precautions taken to prevent accidental contact or contamination with incompatible materials, compounds, and agents.
- (4) The chemical Safety Data Sheet (SDS) shall be referenced for incompatibility, safe handling and storage precautions.
- (5) Damaged or leaking containers will be immediately reported to the Foreman or Garage Supervisor for proper containment, cleanup, handling, and disposal.
- (6) Chemical storage areas will be visually inspected weekly by the Foreman or Garage Supervisor to determine the condition of containers and storage methods.
- (7) Immediate corrective action will be taken as required.

C. Cooking

- (1) Cooking is permitted only in properly arranged and equipped authorized locations.
- (2) No cooking or use of coffee makers, hot plates, microwaves, and similar small electrical appliances is permitted in buildings unless such rooms or areas are provided with electrical circuits capable of supporting all devices safely.
- (3) Hoods and ductwork over cooking surfaces will be cleaned annually by an outside contractor to prevent excess grease accumulations.
- (4) Exhaust systems over cooking surfaces where smoke or grease-laden vapors are produced, will be provided with removable noncombustible filters or listed grease extractors. Cooking will not be done unless all filters are in place.
- (5) Hoods and associated duct systems over commercial type cooking equipment where grease-laden vapors are produced in snack bars, cafeterias, and other large food preparation facilities will be protected by approved fire suppression equipment.

D. Hot Work

- (1) For information regarding hot work reference Protocol 25, Welding and Cutting (Hot Work).

8. Fire Protection Control and Warning Systems**A. System Inspection**

It is critical for all facilities where PennDOT is the party responsible for maintaining fire alarm and protection systems to implement and adhere to a thorough test and inspection maintenance program to ensure the continued protection for all employees. For additional information on inspections or determination of who conducts inspections, contact the Department of General Services (DGS) or facilities. For those types of inspections that are required more frequently than once each year, the following tests and inspections shall be performed and documented with the highlighted frequency:

- (1) Fire Alarm System
 - a. Visually check the fire alarm control panel weekly in accordance with NFPA 72, Chapter 10.
 - b. Test the fire alarm system monthly on emergency backup power (battery or generator).
- (2) Fire Sprinkler System
 - a. Visually check automatic fire sprinkler system weekly in accordance with NFPA 25.
 - b. Test all tamper switches weekly to ensure they activate an audible and visual signal at the fire alarm control panel.
 - c. Perform a water flow test of wet system fire sprinklers quarterly in accordance with NFPA 25.
- (3) Fire Extinguishers
 - a. Visually check fire extinguishers monthly in accordance with NFPA 10, Chapter 2.
 - b. Date and sign the tag that is affixed to each fire extinguisher.
 - c. Upon being discharged or damaged, extinguishers shall be serviced and/or replaced by a certified third party contract vendor.
- (4) Generator
 - a. Check generator weekly in accordance with NFPA 110, Appendix A.
 - b. In accordance with manufacturer recommendations, AHJ, and NFPA 110 Chapter 8, all Emergency Power Supply Systems (EPSS) shall be ran under load at least once monthly for the length of time dictated by the manufacturer. Test all egress doors equipped with locking devices monthly.

- (5) Other Fire Protection Features and Devices
 - a. Test all egress doors equipped with locking devices monthly.
 - b. Test all fire and smoke doors monthly to ensure they close and latch in accordance with NFPA 80.
 - c. Other water-based fire protection devices (standpipes, fire pumps) shall be tested based on frequencies specified in NFPA 25.
- B. Servicing of Fire Protection Systems and Equipment
 - (1) All fire protection systems and equipment shall be inspected, tested, and maintained in accordance with adopted nationally recognized standards and state regulations.
 - (2) Persons that are qualified, based on competence through training and experience, shall perform all required inspections, testing, and maintenance.
 - (3) All required inspections, testing, and maintenance shall be performed by a qualified third party service provider.
 - (4) All required maintenance, repairs, and third party services shall be documented.
 - (5) All inspections, testing, and maintenance procedures of fire protection systems and equipment shall be documented in writing.
- C. Fire Extinguisher
 - (1) If portable fire extinguishers are placed in a building, fire extinguishers must be kept fully charged and in their designated places.
 - (2) The extinguishers will not be obstructed or obscured from view. A map indicating the locations of all fire extinguishers for each specific location is maintained by the District Safety Coordinator.
 - (3) The fire extinguishers will also be inspected at least monthly by a Foreman, Garage Supervisor, or a designated employee to make sure that they are in their designated places, have not been tampered with or actuated, and are not corroded or otherwise impaired.
 - (4) Fire extinguishers equipped in crew cabs shall be stored within the designated compartment.
 - (5) For offices and repair garages, the travel distance between fire extinguishers shall not exceed 75 feet.
 - (6) Attached inspection tags should be initialed/dated each month as a best practice.
 - a. Inspection tags are not required for fire extinguishers located on CDL equipment. As a best practice, these fire extinguishers should be securely mounted and visually inspected each month.
 - b. If your department requires a daily inspection, then you must follow that guidance. (example: Operators Daily Report for Mobile Equipment Form (M-614))
 - (7) All high hazard areas such as weld shops and large concentration flammable storage areas shall be equipped with a dedicated fire extinguisher.

9. Training

Education concerning the employee's specific duties and responsibilities shall be conducted as follows:

A. Content

- (1) Training shall be based on these plans.
- (2) Fire & Life Safety Competencies
 - a. Fire Prevention
 - I. Employees shall be instructed in the proper procedures for preventing fires in the conduct of the assigned duties.

- II. Employees shall identify at least three common types of ignition sources that cause fires and describe several places where they are likely to be found.
- (3) Employees shall describe the “PASS” procedure for using a fire extinguisher.
- P – Pull the pin
A – Aim the nozzle
S – Squeeze the handle
S – Sweep from side to side
- B. Frequency
- (1) Prior to reporting to their newly assigned departments or positions, employees shall be instructed in the use of and response to fire alarms. (Pub 445M, Element I)
- (2) Within 30 days of hire, employees shall be trained in fire prevention, evacuation, and fire safety. Employees shall also be trained in the fire emergency procedures described in their fire evacuation and fire safety plans.
- (3) All employees shall receive training on the fire safety plan as part of new employee orientation and at least annually thereafter.
- C. Training Records
- (1) Records of training will be maintained electronically as part of the employee training file.

10. Inspections and Audits

- A. Protocol Audits
- (1) Annually the written protocol will be audited to ensure the processes established in this protocol are being followed.
- (2) Fire prevention and control compliance checklists are available to evaluate operations and areas for compliance with this protocol. See Appendix A.
- B. Fire Protection Equipment Inspections
- (1) Documentation shall be in an approved format that clearly indicates all information as required by this fire safety plan.
- (2) Documentation Retention
- a. Documentation of PennDOT facility inspections and tests, third party inspections, and testing and maintenance records of fire protection systems and equipment, shall be kept in a permanent file on the premises by facility management for the life of the building.
- b. Fire evacuation drills, employee’s in-service training reports, fire watch logs and completed After Action Review Form P-9 shall be kept in a permanent file on the premises for a minimum of three years.

11. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Topic
1-11	Original based on AIPP structure for protocols
5-9	Current practices

Appendix A

Welding, Cutting and Brazing Compliance Checklist

Welding, Cutting and Brazing Compliance Checklist	YES	NO	N/A
1. Are only authorized and trained personnel permitted to use welding, cutting, or brazing equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has every trained employee been provided a copy of the appropriate operating instructions and are operators directed to follow them?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are compressed gas cylinders regularly examined for obvious signs of defects, deep rusting, or leakage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is care used in handling and storage of cylinders, safety valves, relief valves, etc. to prevent damage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are precautions taken to prevent the mixture of air or oxygen with flammable gases, except on a standard cooking burner and standard welding torch?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Are only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, manifolds) used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Are cylinders kept away from sources of heat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Cylinders are not being used as rollers or supports?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Are empty cylinders appropriately marked and their valves closed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Are signs reading "Danger-No Smoking, Matches or Open Flames" or the equivalent posted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Are cylinders, cylinder valves, couplings, regulators, hoses and apparatus kept free of oily or greasy substances?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Is care taken not to drop or strike cylinders?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Unless secured on special trucks, are regulators removed and valve protection caps put in place before moving cylinders?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Do cylinders without hand wheels have keys, handles or nonadjustable wrenches on stem valves when in service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are liquefied gases stored and transported valve end up with valve covers in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Are provisions made never to crack a fuel-gas cylinder valve near sources of ignition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Before a regulator is removed, is the valve closed and gas released from the regulator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Is red used to identify the acetylene (and other fuel-gas) hose, green for oxygen hose and black for inert gas and air hose?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Are pressure reducing regulators used only for the gas and pressures for which they are intended?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Is open circuit (no load) voltage of arc welding and cutting machines as low as possible and not in excess of the recommended limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Under wet conditions, are automatic controls for reducing no load voltage used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Is grounding of machine frame and safety ground connections of portable machines checked periodically?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Is it required that electrical power to the welder be shut off when no one is in attendance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Is suitable fire extinguishing equipment available for immediate use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Welding, Cutting and Brazing Compliance Checklist	YES	NO	N/A
25. Is the welder forbidden to coil or loop welding electrode cable around their body?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Are wet machines thoroughly dried and tested before being used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Are work and electrode lead cables frequently inspected for wear and damage, and replaced when needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Do means of connecting cable lengths have adequate insulation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. When the object to be welded cannot be moved and fire hazards cannot be removed, are shields used to confine heat, sparks, and slag?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Are fire watchers assigned when welding or cutting is performed in locations where a serious fire might develop? See Protocol 25 Welding and Cutting (Hot Work).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. When floors are wet down, are personnel protected from possible electrical shock?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. When welding is done on metal walls, are precautions taken to protect combustibles on the other side?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Before hot work is begun, are used drums, barrels, tanks, and other containers so thoroughly cleaned that no substances remain that could explode, ignite, or produce toxic vapors?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Is it required that eye protection, helmets, hand shields and goggles meet standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Are employees exposed to the hazard created by welding, cutting or brazing operations protected with personal protective equipment clothing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Is a check made for ventilation in and where welding or cutting is performed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. When working in confined spaces, are environmental monitoring tests taken and means provided for quick removal of welders in case of an emergency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

 Signed

 Date

 Audited by (print)

Flammable and Combustible Materials Compliance Checklist

Flammable and Combustible Materials Compliance Checklist	YES	NO	N/A
1. Are combustible scrap, debris, and waste materials (oily rags, etc.) stored in covered metal receptacles and removed from the worksite promptly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is proper storage practiced minimizing the risk of fire including spontaneous combustion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are approved containers and tanks used for the storage and handling of flammable and combustible liquids?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are all connections on drums and combustible liquid piping vapor and liquid tight?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are all flammable liquids kept in closed containers when not in use (e.g., parts cleaning tanks, pans, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Are bulk drums of flammable liquids grounded and bonded to containers during dispensing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Do storage rooms for flammable and combustible liquids have explosion proof lights?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Do storage rooms for flammable and combustible liquids have mechanical or gravity ventilation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is liquefied petroleum gas stored, handled, and used in accordance with safe practices and standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Are "No Smoking" signs posted on liquefied petroleum gas tanks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Are liquefied petroleum storage tanks guarded to prevent damage from vehicles?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Are all solvent wastes and flammable liquids kept in fire-resistant, covered containers until they are removed from the worksite?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Is vacuuming used whenever possible rather than blowing or sweeping combustible dust?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Are firm separators placed between containers of combustibles or flammables, when stacked one upon another, to assure their support stability?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are fuel gas cylinders and oxygen cylinders separated by distance, fire-resistant barriers, etc., while in storage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Are fire extinguishers selected and provided for the types of materials in areas where they are to be used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Class A ordinary combustible materials fires	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Class B flammable liquid, gas, or grease fires	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Class C energized electrical equipment fires	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Are appropriate fire extinguishers mounted within 75 feet of outside areas containing flammable liquids, and within 10 feet of any inside storage area for such materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Are extinguishers free from obstructions or blockage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Are all extinguishers serviced, maintained, and tagged at intervals not to exceed one year?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Flammable and Combustible Materials Compliance Checklist	YES	NO	N/A
20. Are all extinguishers fully charged and in their designated places?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Where sprinkler systems are permanently installed, are the nozzle heads so directed or arranged that water will not be sprayed into operating electrical switch boards and equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Are "No Smoking" signs posted where appropriate in areas where flammable or combustible materials are used or stored?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Are safety cans used for dispensing flammable or combustible liquids at a point of use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Are all spills of flammable or combustible liquids cleaned up promptly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Are storage tanks adequately vented to prevent the development of excessive vacuum or pressure as a result of filling, emptying or atmospheric temperature changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Are storage tanks equipped with emergency venting that will relieve excessive internal pressure caused by fire exposure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Are "No Smoking" rules enforced in areas involving storage and use of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Signed _____

Date _____

Audited by (print) _____

Fire Protection Compliance Checklist

Flammable and Combustible Materials Compliance Checklist	YES	NO	N/A
1. Is your local fire department well acquainted with your facilities, its location, and specific hazards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. If you have a fire alarm system, is it certified as required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. If you have a fire alarm system, is it tested at least annually?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. If you have interior standpipes and valves, are they inspected regularly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. If you have outside private fire hydrants, are they flushed at least once a year and on a routine preventative maintenance schedule?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Are fire doors and shutters in good operating condition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Are fire doors and shutters unobstructed and protected against obstructions, including their counterweights?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Are fire doors and shutter fusible links in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Are automatic sprinkler systems water control valves, air and water pressure checked weekly/periodically as required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is the maintenance of automatic sprinkler systems assigned to responsible persons or to a sprinkler contractor?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Are sprinkler heads protected by metal guards, when exposed to physical damage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Is proper clearance maintained below sprinkler heads?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are portable fire extinguishers provided in adequate number and type?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Are fire extinguishers mounted in readily accessible locations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are fire extinguishers recharged regularly and noted on the inspection log?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Are employees periodically instructed in the use of extinguishers and fire protection procedures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

 Signed

 Date

 Audited by (print)

Protocol 9 – Substance Abuse Awareness & Prevention

Section	Topic	Page
1	Applicable Laws and Executive Orders	P9 - 1
2	Policies	P9 - 1
3	Procedures	P9 - 1
4	Training and Communications	P9 - 2
5	Checklists and Forms	P9 - 2
6	Program Review	P9 - 3
7	Recordkeeping	P9 - 3

The Employee Safety and Training Division maintains the content of this protocol, but has no direct responsibilities or involvement in its implementation.

The Governor's Office of Administration (OA), Office for Human Resources and Management (OA/HRM), Employee Relations and Workforce Support Division provides the policies, responsibilities, and procedures that are fully implemented at PennDOT to promote a workplace that is drug and alcohol free. This protocol briefly describes the policies, procedures, training, and communications regarding substance abuse in the workplace and applicable provisions of the Drug-Free Workplace Act of 1988. (The policies and procedures for federally mandated drug and alcohol testing for commercial drivers are described in Protocol 13, Fleet Accident Prevention.)

1. Applicable Laws and Executive Orders

- A. Drug-Free Workplace Act of 1988, (P.L. 100-690, Title V. Subtitle D)
- B. Controlled Substance Act (21 U.S.C. 812)
- C. Executive Order 1980-18 Code of Conduct
- D. Executive Order 1996-10 State Employee Assistance Program
- E. Executive Order 1996-13 Commonwealth of Pennsylvania's Policy on Substance Abuse in the Workplace

2. Policies

- A. Management Directive 505.22 State Employees Assistance Program (March 13, 2017)
- B. Management Directive 505.25 Substance Abuse in the Workplace (March 13, 2017)

3. Procedures

- A. Manual 505.3 State Employee Assistance Program
 - (1) Provides the procedures regarding fitness for duty, performance based intervention, mandatory referrals, and condition of continued employment (COCE) agreements regarding violations of the policy regarding substance abuse in the workplace.
 - (2) Defines the reporting procedures for employees convicted of crimes covered by the policy regarding substance abuse in the workplace.
 - (3) Defines the services available to employees for substance abuse related issues, including information on how to initiate services and/or referral procedures. Refer to Chapter G for additional information regarding the State Employee Assistance Program (SEAP).

- (4) Describes the methods for ensuring the confidential handling and maintenance of all information pertaining to an employee's personal problems, substance abuse, and involvement in SEAP and/or other treatment, in accordance with state and federal regulations.
- B. Management Directive 505.25 Substance Abuse in the Workplace describes the procedures for submitting Certificates of a Drug-Free Workplace that must be completed by any organization prior to receiving or renewing a federal contract of \$100,000 or more, or a grant of any denomination. This process is not required to continue receiving funds under a grant awarded before March 19, 1989, or under a non-cost time extension of any grant.

4. Training and Communications

- A. The Human Resource Service Center (HRSC) ensures that a copy of the Executive Order 1996-13, Commonwealth of Pennsylvania's Policy on Substance Abuse in the Workplace is given to all new employees through the onboarding process.
- B. A memorandum is distributed to all employees annually, during the month of June, signed by the Secretary of PennDOT and accompanied with a copy of the Executive Order 1996-13, Commonwealth of Pennsylvania's Policy on Substance Abuse in the Workplace. The subject of the memorandum is Drug-Free Work Place Act of 1988.
 - (1) The memorandum and Executive Order 1996-13, Commonwealth of Pennsylvania's Policy on Substance Abuse in the Workplace are mandatory bulletin board postings at all facilities.
 - (2) The content of the memorandum:
 - a. Acknowledges the policy
 - b. Emphasizes no tolerance for violations
 - c. Describes the penalties for violations
 - d. Notifies employees of the requirement to report criminal drug statute convictions for violations occurring in the workplace
 - e. Provides contact information for SEAP to receive free and confidential services that address problems with alcohol or drugs
- C. SEAP Drug-Free Workplace curriculum is provided to all employees every two years through either web based training, classroom instruction, or a review of the required information by a supervisor, which covers but is not limited to the following:
 - (1) The Executive Order 1996-13, Commonwealth of Pennsylvania's Policy on Substance Abuse in the Workplace.
 - (2) The availability of and contact information for SEAP services.
 - (3) Fitness for duty policies and requirements.
 - (4) The types of substances and the hazards associated with substance abuse.
 - (5) The agency's disciplinary policy and procedures.
- D. The SEAP Supervisor/Manager curriculum is provided to all supervisors.
- E. Participation in the SEAP Drug-Free Workplace and SEAP Supervisor/Manager training is tracked in LSO.
- F. The training and communications for federal drug and alcohol testing requirements for commercial drivers are covered in Protocol 12, Fleet Accident Prevention.

5. Checklists and Forms

- A. The Certification of Drug-Free Workplace form is included in Management Directive 505.25.
- B. Fitness for Duty Checklists (visual observation and questionnaire) are available in Manual 505.3.

6. Program Review

- A. The effectiveness of this program in preventing workplace hazards, injuries, and illnesses is evaluated at least annually with appropriate actions taken to address any program deficiencies found.
- B. This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

7. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Topic
All	Original, based on AIPP requirements for Protocol 9 and current practices.

Protocol 10 – Bloodborne Pathogen Exposure Control

Section	Topic	Page
1	Scope	P10 - 1
2	Applicable Standards	P10 - 1
3	Definitions	P10 - 1
4	Policy	P10 - 2
5	Prevention of Transmission	P10 - 2
6	Exposure Control Plan	P10 - 3
7	Training Requirements	P10 - 6
8	Program Review	P10 - 6
9	Recordkeeping	P10 - 6

PennDOT is committed to providing a safe, nondiscriminatory environment for all employees. In relation to HIV/AIDS and other bloodborne infections/diseases, it is PennDOT's duty to protect employees against the hazards related to exposure to blood or other potentially infectious bodily fluids. This protocol provides educational information, identifies training and reporting requirements, and establishes PennDOT's Exposure Control Plan for Bloodborne Pathogens and Infectious Diseases, to ensure that all employees are informed about bloodborne pathogens and are aware of possible occupational exposures.

1. Scope

This protocol applies to all employees. While most employees are unlikely to be exposed to a bloodborne pathogen, there are some work operations that may put an employee at increased risk of exposure. These operations are identified in the Exposure Control Plan.

2. Applicable Standards

- A. OSHA 1910.30 Bloodborne Pathogens
- B. Act 96 Bloodborne Pathogen Standard Act
- C. Executive Order 2003-4 Workplace Policy for HIV/AIDS
- D. Management Directive 505.26 HIV/AIDS and Other Bloodborne Infections/Diseases in the Workplace

3. Definitions

- A. Bloodborne Pathogens: Disease causing microorganisms that are present in human blood and other potentially infectious materials (OPIM). OPIMs are bodily fluids that have the potential of carrying blood. The following examples are classified as OPIM:
 - (1) Semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid and saliva in dental procedures.
 - (2) Any bodily fluid that is visibly contaminated with blood and all bodily fluids in situations where it is difficult or impossible to differentiate between the bodily fluid.
 - (3) Any unfixed human tissue or organ from a human that are transmitted through contact with the blood and OPIM of an infected individual.

NOTE: Urine and feces, among other bodily fluids not listed above, are NOT OPIM, and therefore, items contaminated with any amount of these bodily fluids do not carry enough bloodborne pathogens to be considered regulated medical waste.

- B. Infectious Diseases: Diseases that can occur following exposure to bloodborne pathogens. HIV/AIDS and Hepatitis B and C viruses are the most prevalent, but there are others. In most cases, blood to blood contact is required, although transmission can occur when infected blood, including dried blood, contacts mucous membranes such as the eyes and mouth, open cuts, sores, abrasions, or broken skin.

4. Policy

- A. Persons who have or are perceived to have bloodborne infections/diseases are to be treated with respect and dignity, and shall not be discriminated against through the denial of government services or employment. All services normally provided to eligible individuals will be provided regardless of whether they have or are perceived to have bloodborne infections/diseases.
- B. Employees are expected to work in a professional manner with coworkers, members of the public and clients who have or are perceived to have bloodborne infections/diseases.
- C. No current or prospective employee, consultant, or vendor will be required to disclose their health and medical status related to bloodborne infections/diseases, to undergo diagnostic testing associated with bloodborne infections/diseases, or to reveal the results of bloodborne infection/disease tests, whether testing is administered during commonwealth work time or not, unless required by federal or state law or regulations.
- D. Employees are to use universal precautions in all situations involving potential exposure to bloodborne pathogens.
- E. Employees whose workplace or work assignment has a high likelihood for occupational exposure will be provided appropriate PPE to help reduce exposure and appropriate engineering controls and work practice controls will be implemented and used.
- F. Health and medical information including test results of employees, members of the public, and clients will be maintained in accordance with established confidentiality laws, regulations and policies.
- G. PennDOT is committed to ensuring the utmost protection of confidential medical information. Employee medical information will be maintained in accordance with established confidentiality laws and regulations and commonwealth privacy rules.
- H. In accordance with Commonwealth Management Directive 505.26, no current or prospective employee, consultant, or vendor will be required to disclose their medical status related to bloodborne infections/diseases or undergo diagnostic testing as a condition of employment unless required by federal or state laws or regulations.
- I. An employee must immediately notify their supervisor when contact is made with blood or OPIM. If the source of the blood is known, report this information to the supervisor and/or healthcare professional providing care because it can play a vital role in determining the course of treatment. If the employee requests medical treatment or if the supervisor identifies that a potential exposure occurred, the employee must be taken for medical treatment in accordance with PennDOT's procedures for reporting a work-related injury.

5. Prevention of Transmission

- A. Universal precautions should be followed by all employees where there is the potential for exposure to infected blood or OPIM. The concept of universal precautions is to treat all blood and bodily fluids as if they contain infectious bloodborne pathogens regardless of the source. Universal precautions involve the use of engineering controls, work practice controls and personal protective equipment (PPE). Employees should take precautionary measures such as avoiding contact with any human blood products and following the cleanup procedures identified in the Exposure Control Plan.
- B. Engineering controls are the best line of defense against exposure. Engineering controls isolate and/or remove the hazard from the workplace. Examples of engineering controls are dust pans and brooms, litter pickers and grabbers, and spill kits.

- C. Work practice controls are methods or procedures designed to minimize the likelihood of an exposure such as proper donning and doffing of PPE, proper hand washing technique and proper cleanup, decontamination and disposal techniques.
- D. PPE should be used as a last line of defense against a bloodborne pathogen or used as a complement to an engineering control and/or work practice control. PPE provides a barrier between an individual and the bloodborne pathogen hazard. PPE includes but is not limited to gloves, aprons, masks or protective eyewear.
- E. Hepatitis B vaccinations are recommended for any employee involved in operations where the potential for exposure exists as identified in the Exposure Control Plan. The commonwealth's health insurance program provides coverage for the administration of this vaccination. If health insurance coverage exists, it must be utilized. Any additional costs, such as co-payments, should be prepaid or direct billed to the employee's organization.

6. Exposure Control Plan

The Exposure Control Plan for Bloodborne Pathogens/Infectious Diseases provides information on procedures for implementing an immediate response in the event of an exposure incident. The Exposure Control Plan also identifies hazardous work operations where potential exposure to blood or bodily fluids can occur, preventative measures that must be taken to protect the employee, cleanup procedures, post-exposure care and treatment, and incident documentation retention requirements.

- A. Person(s) Responsible for Maintaining Bloodborne Pathogen (BBP) Program:
 - (1) Employee Safety and Training Division
 - (2) District Safety Coordinators (DSC)
- B. Occupational Exposure Potential:

Certain work operations increase an employee's potential for an exposure to a bloodborne pathogen because the probability of contact with blood or bodily fluids exists. The following PennDOT operations may be most at risk for potential exposure:

 - (1) Employees assigned to litter pickup
 - (2) Janitorial/Housekeeping Staff
 - (3) First Responders
 - (4) Pipe Flushing Crews
 - (5) Wastewater Plant Operators
 - (6) Any employee whose supervisor feels that the potential for exposure exists, upon review and confirmation by the DSC or the Employee Safety and Training Division.
- C. Exposure Control Plan Requirements:
 - (1) Provide information on the BBP policy and the Exposure Control Plan to all employees annually.
 - (2) Identify immediate response guidelines. (Covered in Section J)
 - (3) Require annual training for employees identified as being at risk.
- D. Universal Precautions:
 - (1) Treat all human blood or bodily fluids as if infected, regardless of the source.
 - (2) Use engineering controls, work practice controls and PPE to eliminate and/or minimize exposure to BBPs:
 - a. Engineering Controls (Covered in Section E)
 - b. Work Practices (Covered in Section F)

- c. Wear appropriate PPE (Covered in Section G)
 - d. Follow proper clean up procedures for all spills and proper disposal methods for all contaminated items. (Covered in Section H)
- E. Engineering/Administrative Controls to Reduce Exposure:
- (1) Use provided equipment to transfer the risk from the employee. For example, during litter pick up operations use tools such as pickers and grabbers or a shovel to remove any biohazard items rather than hand picking.
 - (2) Use contracted cleaning services where available to clean up blood or bodily fluid spills. For example, a contracted janitorial service/Department of General Services janitor.
- F. Safe Work Practices to Eliminate or Minimize Employee Exposure:
- (1) Communicate availability and location of the eye wash station, first aid kit, facilities with running water and soap, and cleaning materials identified in this plan to all employees.
 - (2) Establish a perimeter around any spill to prevent accidental contact.
 - (3) Follow established procedures for safe work operations to prevent the possibility of injury.
 - (4) Conduct appropriate safety talk(s) prior to the start of a work operation where the potential for exposure exists.
 - (5) Use mandated PPE properly.
 - (6) Properly don and doff PPE.
 - (7) Wash hands and any other exposed skin with soap and water and flush mucous membranes immediately following any contact with blood or other potentially infectious material. This should also occur after removing PPE.
 - a. If soap and running water are not immediately available, use antiseptic hand cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes.
 - b. Employees must then be transported to the nearest facility with hand washing facilities, and the affected area must be thoroughly washed with soap and running water. (Follow post-exposure guidelines under Section J).
- G. PPE Use:
- (1) Required for operations where there is a potential bloodborne pathogen or OPIM exposure hazard. PPE must be made available and used properly.
 - (2) PPE is provided at no cost to employees and must be used by employees as required by established policy. This shall include but not be limited to gloves, face shields, masks, rain wear and eye protection.
 - (3) Managers and supervisors are responsible for ensuring that employees are properly protected by instructing on the correct use of PPE.
 - (4) PPE is available through an employee's supervisor/manager and is distributed by the stockroom clerk or purchasing officer.
 - (5) PPE may be distributed to employees or signed out from a central location as needed. The stockroom clerk, in consultation with the DSC, will identify when PPE needs to be replaced. Managers and supervisors are also responsible for ensuring that PPE is in good condition and will provide effective protection.
- H. Cleaning/Decontamination:
- (1) Block off the area of the spill until cleanup and disinfection is complete.
 - (2) Put on all appropriate PPE to prevent contamination during clean up.
 - (3) Remove all broken glass and/or sharps using a broom and dustpan or other mechanical means and place in a puncture proof/resistant container and dispose of properly.
 - (4) Wipe up the spill using paper towels or absorbent material and place in a plastic garbage bag.

- (5) Gently mix a disinfecting solution consisting of one part household bleach to nine parts cool water (approximately two cups of bleach to one gallon of cool water).
- (6) Gently pour bleach solution onto all contaminated areas of the surface, from the outside perimeter in to contain the contaminated areas.
- (7) Let the bleach solution remain on the contaminated area for 20 minutes.
- (8) Wipe up the remaining bleach solution.
- (9) All nondisposable cleaning materials used such as mops and scrub brushes should be disinfected by saturating with bleach solution and air dried.
- (10) Remove gloves and place in plastic garbage bag with all soiled cleaning materials.
- (11) Double bag and securely tie plastic garbage bags and discard.
- (12) Thoroughly wash hands with soap and water.
- (13) Clean/sanitize clothing or materials including PPE contaminated with blood or other bodily fluids. Clothing or material that cannot be cleaned/sanitized must be sealed in a plastic bag and disposed of properly.

I. Optional Hepatitis B Vaccinations:

Vaccinations shall be offered to employees whose usual work assignment puts them at risk for exposure to bloodborne pathogens. The commonwealth's health insurance program will cover costs associated with this vaccination.

- (1) Document names of all employees for whom vaccinations were recommended.
- (2) Employees must provide a completed Hepatitis B Vaccination Log (P-12) to the Safety Coordinator. Obtain a P-12 from the District Safety Coordinator or Employee Safety and Training Division.
- (3) Employees refusing the vaccinations shall do so by signing a Hepatitis B Declination (P-13). Obtain a P-13 from the District Safety Coordinator or Employee Safety and Training Division.
- (4) The Safety Coordinator or Employee Safety and Training Division must maintain vaccination information or the P-13 in a separate, confidential medical file.

J. Post-Exposure Care & Treatment:

- (1) Immediate medical care is paramount. Studies have shown evidence of reduced infection rates with immediate medical treatment when an exposure has occurred.
- (2) An employee must notify their supervisor immediately of an exposure incident.
- (3) Unless emergency medical care is necessary, the supervisor or other designee shall transport the employee(s) to the nearest medical facility equipped to handle exposures to bloodborne pathogens and/or other potentially infectious materials (emergency room or acute care facility).
 - a. Employees should be aware that immediate post-exposure treatment may help prevent a bloodborne pathogen infection. A post-exposure injection of Hepatitis B immune globulin is available if the employee has not been immunized. Other post-exposure medications such as antivirals may be prescribed by the treating physician to prevent infection after exposure.
 - b. If applicable, the source individual will be identified and appropriate consent will be obtained for testing when feasible. Within 15 days, a report will be provided to the exposed employee.
 - c. Maintain confidentiality in accordance with Management Directive 505.26 HIV/AIDS and Other Bloodborne Infections/Diseases in the Workplace.
 - d. If medical treatment was sought, follow procedures for reporting a work-related injury. Or if no treatment is sought, document as a work-related injury incident and keep as a permanent record in the the employee's Electronic Official Personnel File (E-OPF).

- e. The circumstances of the exposure will be documented and preventative measures will be implemented to avoid future exposures.
- (4) Medical records of the incident will be maintained in a separate, secure and confidential file for each employee. These records shall be maintained for the length of employment plus 30 years thereafter and are to include:
- a. Social security number.
 - b. Hepatitis B vaccination status, dates of vaccination and consent/refusal form.
 - c. Exposure incident information, post-exposure follow up information and all other relevant records.
- K. Availability of Exposure Control Plan:
- (1) A copy is provided to employees at time of hire or orientation/onboarding.
 - (2) A copy is provided during annual training to employees who have the greatest risk of potential occupational exposure.
 - (3) Available upon request.

7. Training Requirements

- A. All new employees will receive this policy at employee orientation to ensure they are educated on bloodborne pathogen transmission, universal precautions, potential workplace exposures, and procedures for reporting exposures.
- B. Employees that are identified as first responders (those trained and certified to perform CPR/First Aid) or most likely to have an occupational exposure to blood or other potentially infectious material (OPIM), must receive detailed annual training. This includes familiarization with the Exposure Control Plan, universal precautions, the availability and use of PPE, the potential exposures, and the methods of blood/bodily fluid cleanup.

8. Program Review

This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

9. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Topic
1-7	PPIM 09-126 Bloodborne Pathogens/Infectious Diseases (Issued 7/15/09) Management Directive 505.26
8-9	Original based on AIPP requirements for Protocol 10

Protocol 11 – Pre-Operational Review Process

Section	Topic	Page
1	Policy	P11 - 1
2	Scope	P11 - 1
3	Applicable Standards	P11 - 1
4	Roles and Responsibilities	P11 - 1
5	SAP Process Procedure	P11 - 3
6	County Equipment Budget (CEB) Database Procedure	P11 - 3
7	Training and Communications	P11 - 4
8	Program Review	P11 - 4
9	Recordkeeping	P11 - 4

1. Policy

This pre-operational review process shall be followed when there is to be the introduction of a new or modified piece of equipment or vehicle. It is PennDOT's policy to ensure employees are protected from potential hazards associated with a new or modified piece of equipment or vehicle.

2. Scope

This protocol applies when there is a request for the review of a new or modified piece of equipment or vehicle to be implemented in the workplace.

3. Applicable Standards

The following list includes some related standards that may apply; however, it is not all inclusive:

- A. Pub 445M, Manual for Employee Safety & Health; Chapter E Hazard Identification and Controls
- B. Pub 517, Job Safety Analysis Manual
- C. Pub 23, Maintenance Manual
- D. Pub 177, Equipment Maintenance and Management Policies Manual
- E. OSHA 1910.119, Process Safety Management

4. Roles and Responsibilities

- A. District Executives/Assistant District Executives/Bureau Directors
 - (1) Responsible for the overall implementation of this protocol.
 - (2) Responsible to notify a designated person, who has access to Systems Applications and Products (SAP) Process, of the need for a pre-operational review in their respective district.
 - (3) Any purchases of new equipment shall be evaluated through the Capital Equipment Database (CED) process.
 - (4) Assist in approval of new equipment purchases.
- B. Employee Safety and Training Division
 - (1) Administer and maintain the pre-operational review process protocol.
 - (2) Annually review and if needed, update the pre-operational review process protocol.

- (3) Evaluate the effectiveness of the pre-operational review process protocol on an annual basis.
 - (4) Develop or assist in the development of training to educate employees on the new piece of equipment or vehicle, when required.
 - (5) Determine if a Job Safety Analysis will need to be completed or updated in conjunction with developing a training.
- C. Fleet Management Division Chief
- (1) Reviews all requests for equipment or vehicle modifications that have the potential to affect the safety, warranty or Equipment Class Code (ECC) of equipment or vehicles.
 - (2) Approves or rejects requests based on their determination.
 - (3) Assists in approval of new equipment purchases.
- D. District Equipment Managers
- (1) Reviews all requests for new or modified equipment or vehicles.
 - (2) Approves or rejects requests that do not have the potential to affect the safety, warranty or ECC of the equipment or vehicles.
 - (3) Provides any requests for equipment or vehicle modifications that have the potential to affect the safety, warranty or ECC to the Fleet Management Division Chief for their review and determination.
- E. County Equipment Managers
- (1) Ensures that the Preventative Maintenance Program is conducted and adhered to in accordance with Pub 177, Equipment Maintenance and Management Policies Manual.
 - (2) Takes part in the SAP Process (see Section 5 of this protocol for additional information).
 - (3) Reviews Equipment Management System computer reports for the equipment in their general organization.
 - (4) Receives reports of any equipment malfunction.
 - (5) Approves any minor repairs/adjustments.
- F. Managers/Supervisors
- (1) Inform the County Equipment Manager when an SAP review process is needed.
 - (2) Ensure employees are trained in the operation of the new equipment, vehicle, modification to existing work procedure or facility renovation prior to commencement of work.
- G. Procurement/Purchasing
- (1) Ensure new equipment purchased has manufacturer instructions and safety information available for its use.
 - (2) Only purchasers with appropriately assigned roles are to initiate and execute purchases of any kind.
- H. Employees
- (1) Attend and participate in training and safety talks.
 - (2) Use required PPE.
 - (3) Ensure safeguards are in place and utilized prior to using the equipment or performing the operation.

5. SAP Process Procedure

The following procedure shall be performed to gain approval for modifications and ECC changes in accordance with Pub 177, Equipment Maintenance and Management Policies Manual.

- A. ECC changes shall be approved by the Fleet Management Division Chief prior to the start of any work leading to the modification. Failure to obtain prior approval before completion of the modification will result in a denied request for ECC change.
- B. A separate M8 notification for plant maintenance (modification request-SAP) shall be completed for each unit to be modified. (i.e. if an extra spreader light is being added to the rear of a few dump trucks, a separate notification must be created for each of the dump trucks being modified.)
 - (1) The County Equipment Manager prepares the M8 for the District Equipment Manager's review, providing as much information as possible. If replacing a unit, reference the old unit equipment number.
 - (2) The District Equipment Manager receives all county reports requesting equipment modification. Reviews the M8 notification and approves or rejects the request(s). If the modification has the potential to affect the safety, warranty, or ECC, the request shall be sent to the Fleet Management Division Chief for review.
 - (3) The Fleet Management Division Chief receives reports of M8 notifications requesting equipment modification that may affect the safety, warranty, or ECC. They then review the M8 notification and approve or reject the request(s) based on their determination.
 - (4) The County Equipment Manager performs or oversees modification when approved.
 - (5) Roadway Programs Coordinator (RPC), Fleet Management Division (FMD) is responsible for updating the ECC to be changed once the notification is acknowledged, if necessary.

For additional information on the M8/SAP process reference Pub 177, Equipment Maintenance and Management Policies Manual.

6. CEB Database Procedure

- A. The following procedure shall be performed to gain approval for the purchase of new highway maintenance equipment. The database is used to purchase and track only new equipment. It enables counties to view previously purchased equipment and to create new entries for equipment that have not been purchased previously. The seven digit equipment number is assigned to equipment after FMD has accepted delivery and the equipment has been processed. (applies to all pieces that have been assigned seven digit identification numbers and for which equipment classification codes have been developed) in accordance with the CEB and Pub 177, Equipment Maintenance and Management Policies Manual.
- B. The CEB database is to be utilized by the District Equipment Manager (DEM) as a form of guidance to equipment available and as a way to request all equipment purchases for PennDOT.
- C. At each step of the process, a notification email will be sent to the responsible party stating that their approval is required. If the request is rejected, the request will be returned to the previous approver for comments on further explanation or justification.
- D. The CEB database approval process shall be routed through the following chain of approval:
 - (1) District Equipment Manager
 - (2) Fleet Management Division Specifications Sections
 - (3) District Equipment Manager
 - (4) Fleet Management Division Chief
 - (5) Assistant District Equipment Manager/District Equipment Manager
 - (6) Chief Executive for Highway Administration
 - (7) Fleet Management Division

- E. The process varies depending on how the information is entered into the database and the cost of the equipment requested to be purchased.
 - (1) Pieces of core equipment have predetermined replacement life cycles.
 - (2) Noncore equipment pieces replacement is determined by the County Equipment Manager through examination of cost, usage and maintenance requirements to identify when it is beneficial and justifiable to replace a piece of equipment.
- F. A justification sheet shall be completed for all add on purchases and for any purchase that is not a “one for one” replacement or core equipment piece during the initial budget purchase. For each district purchase, there are purchase requests that must be filled out as well.

7. Training and Communications

- A. Training on the SAP process/CEB database shall be provided to all employees who have responsibilities defined in the procedure upon assignment. Training will be located on the Employee Self Service (ESS) and shall be received prior to using the SAP/CEB database.
- B. Employees involved in operating or the maintenance of equipment and vehicles shall be informed of and trained in the changes or new operations.
- C. The Employee Safety and Training Division will coordinate with those involved in the SAP process in developing a time frame, distribution and completion dates for training to be administered to affected employees.

8. Program Review

The pre-operational review process protocol will be reviewed annually for needed changes or updates by the Employee Safety and Training Division. The review will also evaluate the effectiveness of this protocol in preventing workplace hazards, injuries and illnesses.

9. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Topic
1-9	Original based on AIPP structure for protocols

Protocol 12 – Slip, Trip and Fall Prevention

Section	Topic	Page
1	Policy	P12 - 1
2	Applicable Standard	P12 - 1
3	Prevention Methods to Reduce Slip, Trip, and Fall Injuries	P12 - 1
4	Training	P12 - 2
5	Program Review	P12 - 3
6	Recordkeeping	P12 - 3

This protocol establishes policy and prevention methods to reduce slips, trips, and falls in the workplace. Since injuries from slips, trips, and falls represent a large portion of all injuries, PennDOT requires these guidelines to be followed to provide a safe work environment.

1. Policy

Working safely is a responsibility shared by all employees. Managers and supervisors are to ensure there is an awareness of these slip, trip, and fall guidelines to educate employees on how their work practices can reduce these types of injuries. Employees are to perform their duties in the safest manner possible and adhere to all established safety rules, procedures, and work practices.

2. Applicable Standard

A. OSHA 1910.22(a)

3. Prevention Methods to Reduce Slip, Trip, and Fall Injuries:

A. Proper housekeeping in offices, including stockpile staging buildings

- (1) Place trash in proper receptacles immediately.
- (2) Keep walkways clear.
- (3) Clean spills promptly using the approved method and immediately place warning devices (signs or cones) when appropriate.
- (4) Never allow desk or file drawers to remain open while unattended.
- (5) Use appropriate rugs and mats. Keep them clean and dry.

B. Proper housekeeping in field and garages

- (1) Store all tools and materials in their proper place.
- (2) Never block fire extinguishers, first aid kits, or other emergency items with tools and materials.
- (3) Keep work areas clean and free of debris that could cause tripping hazards.
- (4) Clean spills promptly using the approved method and immediately place warning devices (signs or cones) when appropriate.
- (5) Use drip trays to catch leaks from equipment or vehicles.
- (6) Ensure materials are stored correctly. Use shelving to provide additional walking/work space.

C. Safe practices

- (1) Paint floors to indicate permanent elevation changes.
- (2) Place drums or cones on temporary elevation changes to highlight the hazard.
- (3) Place mats in high traffic areas.
- (4) Highlight common walkways using paint.
- (5) Implement a schedule to eliminate buildup of snow and ice on walkways.
- (6) If walking on a slippery surface, point toes slightly to the side and take short steps.
- (7) If walking up steep hills, turn sideways and take short steps.
- (8) Use only approved ladders and ensure they are in good working condition.
- (9) When appropriate, use proper means of illumination (flashlight, light towers, etc.)

D. Maintaining three points of contact

- (1) Three points of contact means using two hands and one foot or two feet and one hand.
- (2) This practice should be used when getting on/off vehicles and equipment, as well as when ascending and descending a ladder.
- (3) Do not jump off vehicle or equipment.
- (4) Keep vehicles and equipment free from slip hazards such as spills, materials, tools, and debris.
- (5) Do not try to climb while carrying tools, materials, drinks, etc.

E. Proper footwear

- (1) Safety footwear for field employees must be an “above the ankle” design.
- (2) Footwear must be replaced when it becomes worn or damaged.
- (3) Athletic footwear (i.e., sneakers or tennis shoes) is not permitted for field work.

F. Voluntary Use of Snow/Ice Cleats

- (1) Snow/ice cleats shall not be worn while operating a vehicle/mobile equipment and shall only be donned after exiting the vehicle/mobile equipment.
- (2) Snow/ice cleats shall be removed prior to using a ladder.

G. Be aware of what surrounds you and others

- (1) Keep your eyes on the path that you are walking.
- (2) Keep your mind on the task of walking.
- (3) Be alert of elevation changes.

H. Learning how to fall

- (1) If you do fall, it is important not to reach out.
- (2) Let your body crumble and roll.
- (3) Bend your elbows and knees.
- (4) Use your legs and arms to absorb the fall.

4. Training

Slip, Trip & Fall Prevention (78BHR3200240) has been developed and provided to PennDOT employees as a WBT training and will be updated as necessary.

5. Program Review

This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

6. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Topic
1-3	PPIM 14-164 Slips, Trips, and Falls Guidelines (Issued 2/18/14)
4-6	Original based on AIPP requirements for Protocol 12 and current practices

Protocol 13 – Fleet Accident Prevention

Section	Topic	Page
1	Safe Driving Practices	P13 - 1
2	Safe Driver Training and Instructor Requirements	P13 - 2
3	Commercial Driver License (CDL) – Medical Examiner’s Certificate (MEC) Requirement	P13 - 3
4	CDL – Federal Requirements for Drug and Alcohol Testing	P13 - 5
5	Driver License Requirements and Record Checks Process	P13 - 14
6	CDL/Hazmat Reimbursement for Fuel Truck Operations	P13 - 32
7	Program Review	P13 - 32
8	Recordkeeping	P13 - 32

PennDOT has a large fleet of vehicles owned by the commonwealth that are used to conduct business. This protocol describes a wide variety of policies, procedures, processes, training, and resources designed for the continuous reduction of fleet accidents.

1. Safe Driving Practices

PennDOT requires employees to drive safely and obey all traffic laws while driving PennDOT vehicles or while operating personal vehicles on PennDOT business. Failure to exercise any of the following safe driving practices will be considered a safety violation, and may result in disciplinary action up to and including termination.

- A. Comply with all guidelines, procedures, and directives pertaining to the operation of PennDOT vehicles and applicable sections of the Pennsylvania Vehicle Code.
- B. Ensure the proper use of safety restraints (e.g. seat belts) by all vehicle occupants where equipped.
- C. Never operate a motor vehicle while under the influence of alcohol, illegal drugs or any other substance that impairs ability to drive.
- D. Never engage in text messaging or any unlawful use of a cellular telephone or other handheld device, (e.g. Android, iPhone and/or tablet/laptop) when driving a PennDOT vehicle or personal vehicle on PennDOT business.
- E. Properly position mirrors to minimize blind spots.
- F. When possible, avoid backing. Where two or more employees are present, one must act as a ground guide (spotter) prior to backing a vehicle. Discuss the hand signals that will be used with a designated spotter prior to backing to ensure effective communication. The use of a spotter does not relieve the driver of the responsibility to back up safely. If a spotter is not available, operators are required to ensure the area is clear of personnel or obstructions.
- G. Complete a circle of safety prior to entering a vehicle. Walk completely around the vehicle and observe conditions underneath, on and around the vehicle for potential hazards.
- H. Maintain an appropriate following distance to provide necessary reaction time should a vehicle ahead slow down or stop suddenly.
- I. Avoid rear-end collisions by ensuring the vehicle does not drift backwards, by slowing down gradually to avoid abrupt stops, and by signaling intentions in advance of turns.
- J. Be alert and yield to pedestrians at the workplace and on the highway.
- K. Ensure the vehicle remains in the lane of travel. If lane encroachment is unavoidable due to the size of the vehicle, be prepared to yield to opposing traffic to allow for safe passage.

- L. Yield to rail vehicles at all railroad crossings, being attentive to pavement markings, warning signs and approaching vehicles.
- M. Negotiate turns by using proper signaling, checking mirrors, yielding at crosswalks and to other vehicles as required by law, and being aware of surroundings.
- N. Adjust traveling speeds for conditions including but not limited to weather, road surface conditions, traffic, emergency situations, and variations in road width or direction.
- O. Utilize safety devices or other equipment appropriate for extreme weather conditions such as chains.
- P. Check for and properly judge clearances with all fixed objects such as buildings, utility poles, guy wires, mailboxes, guiderail, parked vehicles, curbs, and signs.
- Q. Park properly by positioning the vehicle within a designated parking space or other safe area. Secure/lock unattended vehicles to prevent theft or unauthorized use.
- R. Ensure all tools, equipment, material and doors are properly secured for transport.
- S. Report all mechanical defects or other noticeable wear promptly to the appropriate Equipment Manager, Mechanic Supervisor, or other management personnel. This may be done using the M-614 form. Collisions caused by mechanical failure due to a reasonably detectable defect that was not reported, due to a reported defect that was not repaired, or due to abusive driving are unacceptable.
- T. Ensure safe operation of all vehicles and equipment in accordance with the manufacturer's designed purpose and operator manual. No altering of equipment or vehicles of any kind is permitted without the Equipment Manager's written approval.
- U. Always drive defensively.

2. Safe Driver Training and Instructor Requirements

The purpose of this training is to reduce the risk of accidents by educating employees on safe and defensive driving practices. Supervisors must ensure that the following training requirements are met by their employees. Supervisors may require employees to attend safe driver training more frequently than indicated below if they are involved in accidents because of unsafe driving practices or are observed engaging in unsafe driving behavior.

A. Safe Driver Training Requirements

The safe driver training program includes participation in either an instructor-led Safe Driver Training course or a Safe Driver Training Online course.

(1) Safe Driver Training Instructor-led (78SAFE000031)

Only employees who operate crew cabs and commercial vehicles for PennDOT must complete the instructor-led course.

- a. New employees must complete this course within 120 calendar days of hire, and current employees who have never completed this course must complete it immediately.
- b. Employees who operate crew cabs and commercial vehicles must complete the instructor-led course every two years from the date they last completed the course.
- c. This training may be scheduled by contacting the training coordinator.
- d. This course consists of six modules and takes approximately five hours to complete. PowerPoint slides are presented with actual driving scenarios, and questions guide discussion on proper decision making throughout the course. Quizzes are taken after each module to test comprehension.

- (2) **Safe Driver Training Online (78BHR3200221)**
 All employees who are not required to take the instructor-led course must complete the online course. New employees must complete it within 90 calendar days of hire. All employees who take this online course are expected to complete it again every four years thereafter. The course can be completed in approximately 45 minutes at the employee’s work station using the SAP Learning System (LSO). At <http://www.myworkplace.state.pa.us>, select “My Training” on the menu to the left and then type the course code in the search box. Select the course (Safe Driver Training Online), scroll down, select “Book This Course,” and select “Start Course Now.”

B. Instructor Requirements

- (1) To ensure the quality and consistency of the training methodology, all facilitators or presenters of the six module Safe Driver Training Instructor-Led course are required to be Certified Instructors. The Training Coordinator or Workforce Development Division may be contacted for further information on how to become a Certified Instructor.
- (2) Instructors of this course are responsible to review the training materials and talking points to ensure the material is adequately covered.
- (3) **Safe Driver Train-the-Trainer Instructor-Led (78BHR3200212)**
 This optional course is available and may be scheduled by contacting the Employee Safety and Training Division.

3. Commercial Driver License (CDL) – Medical Examiner’s Certificate (MEC) Requirement

As part of the Motor Carrier Safety Improvement Act, the Federal Motor Carrier Safety Administration (FMCSA) amended the Federal Motor Carrier Safety Regulations (FMCSRs) to require certain CDL holders to provide and maintain a current copy of their MEC.

- A. To further improve the safety of its employees and the motoring public, PennDOT is extending this requirement to employees in the CDL designated classifications listed below. (If any CDL designated job classifications are added to the classification plan, those classifications will also be covered by this section.)

Job Code	Job Classifications with CDL Designation
10631	Bridge Inspection Crane Technician
10632	Bridge Inspection Crane Technician Supervisor
93130	Diesel and Construction Equipment Mechanic
93133	Diesel and Construction Equipment Mechanic Instructor
92310	Drill Operator
92320	Drill Operator Supervisor
92132	Training Site Administrator
91380	Transportation Equipment Operator A
91400	Transportation Equipment Operator B
92131	Transportation Equipment Operator Instructor
91405	Transportation Equipment Operator Specialist
91360	Transportation Equipment Operator Trainee
91410	Tunnel Maintainer
91420	Tunnel Maintainer Supervisor

- B. Employees that are permanently appointed to a position in one of the above classifications on or after August 1, 2016 must maintain a current MEC, unless they are transferring from a permanent position that required possession of a commercial driver license, most likely in one of the above classifications, to which they were permanently appointed before August 1, 2016 with no break in service.
- C. A special requirement will be listed on each of the affected postings so that applicants are aware of these requirements.

- D. Upon receiving a job offer, prospective employees for these positions will be required to produce a valid MEC. This requirement applies to new hires and rehires into these positions.
- (1) Offers of employment are contingent on PennDOT's receiving a copy of a valid certificate. If the prospective employee fails to provide a copy of the certificate, the offer of employment will be rescinded.
 - (2) If a valid MEC is verified through the driver license record check, a hardcopy of the MEC is not required. A copy of the driver license record abstract should be maintained on file as evidence that this requirement was satisfied.
- E. Responsibilities
- (1) Prospective CDL Employees shall:
 - a. Provide a current copy of a valid MEC upon receiving an offer of employment for a covered position.
 - b. Sign, date, and submit the Self-Certification Form, DL-11CD, designating "NI" ("NA" for employees under age 21 only) as the Self-Certification driving type to the Bureau of Driver Licensing.
 - (2) CDL Employees shall:
 - a. Maintain the MEC. Employees who attend a medical examination for this purpose must utilize leave or attend after work hours. This does not apply to employees who are required to obtain this certification for hazmat purposes.
 - b. Provide a copy of the updated MEC to the Bureau of Driver Licensing prior to the expiration date.
 - c. Notify a supervisor immediately if a medical certification is revoked or expires for any reason.
 - d. Notify a supervisor immediately if a license is revoked for any reason.
 - (3) Supervisors/Managers of CDL Employees shall:
 - a. Ensure prospective employees provide a valid MEC upon giving an offer of employment for a covered position.
 - b. Inform covered employees to sign, date, and submit the Self-Certification Form, DL-11CD, designating "NI" ("NA" for employees under the age of 21 only) as the driving type to the Bureau of Driver Licensing.
 - c. Ensure that these employees are aware of and comply with the need to maintain their MEC, notify the supervisor of any revocation, and provide an updated certificate to the Bureau of Driver Licensing prior to the expiration date.
 - (4) Human Resource Field Operations Division shall:
 - a. Ensure the job postings for the positions referenced above reflect the special requirement of the MEC. The posting should reflect the following language: "This position requires possession of a valid MEC in accordance with the Federal Motor Carrier Safety Regulations."
 - b. Verify that a current and valid MEC was submitted for a selected candidate once the candidate accepts the offer of employment.
 - c. Ensure the Employee Relations and Workforce Support Coordinator is aware of any employee who allows his or her MEC to expire and/or cannot pass the medical examination.
 - d. Determine the reason for the lapse of the employee's medical certificate. If the loss of certification or inability to renew results from or relates to a physical or mental condition, consult with the Central Office Disability Services Coordinator to determine appropriate action. Consult with the Employee Relations and Workforce Support Division prior to recommending or taking disciplinary action in this situation.

- e. Employee Relations and Workforce Support Coordinators should contact the Infrastructure and Economic Development Delivery Center, Employee Relations and Workforce Support Division, with any discipline questions. Appropriate discipline, up to and including dismissal, may result.
- (5) Infrastructure and Economic Development Human Resource Delivery Center (IEDHRDC):
- a. Bureau of Talent Acquisition (BTA) shall:
 - Ensure the job postings for the positions referenced above reflect the special requirement of the MEC. The posting should reflect the following language:
 - I. This position requires possession of a valid MEC in accordance with the Federal Motor Carrier Safety Regulations.
 - II. Verify with the Employee Safety and Training Division that a current and valid MEC was submitted for a selected candidate once the candidate accepts the offer of employment.
 - b. Employee Safety and Training Division
 - I. Notify the Employee Relations and Workforce Support Division of an employee who allows his or her MEC to expire and/or cannot pass the medical examination.
 - II. Verify that a current and valid MEC was submitted for a selected candidate once the candidate accepts the offer of employment.
 - III. Ensure Report 3 is run monthly to make certain that all employees on the report have designated the "NI" ("NA" if under the age of 21) as the driving type and that the MEC has not expired.
 - c. Employee Services Division (Central Office Disability Services Coordinator)
 - I. If the loss of certification or inability to renew results from or relates to a physical or mental medical condition, consult with the Office of Chief Counsel prior to recommending disciplinary or other action.
 - d. Employee Relations and Workforce Support Division
 - I. Confirm the reason for the lapse of the employee's medical certificate. Determine appropriate course of action. Consult with the Office of Chief Counsel as necessary.
 - II. Consult with PennDOT's Central Office Disability Services Coordinator when a physical or mental condition has prevented the employee from maintaining the required certificate prior to determining the appropriate course of action. Consult with the Office of Chief Counsel prior to recommending or taking disciplinary action in this situation.
- F. This policy does not replace or circumvent other policies and procedures in place for hiring CDL drivers.
- G. Questions regarding the requirements of this policy should be directed to the Employee Safety and Training Division.
- H. Questions regarding classification or placement should be directed to the OA Bureau of Organization Management, Position Classification Services Division.

4. CDL – Federal Requirements for Drug & Alcohol Testing

This section briefly describes a mandatory testing program administered by the Governor's Office of Administration in accordance with Management Directive 505.34, Commercial Driver License Drug and Alcohol Testing Requirements and Manual 505.5 Commercial Driver License Drug and Alcohol Testing and Related Procedures.

- A. Federal regulations require drug and alcohol testing of employees whose positions require them to possess a CDL and who perform safety sensitive duties. Federal regulations provide for drug/alcohol tests of such employees in the following situations: pre-employment, random,

reasonable suspicion, post-accident, return-to-duty, and follow up. Employees that are not required to possess a CDL will be referred to as Non-CDL employees in this section.

- B. When testing is required, employees must take the Drug and Alcohol Testing Program Federal Cover Sheet and the Federal Drug Testing Custody and Control Form (drug test only) with them to the collection site.

- C. Pre-employment Test (drug only)

The Federal Motor Carrier Regulations Title 49, Part 382.301(a) states in part that “No employer shall allow a driver, who the employer intends to hire or use, to perform safety sensitive functions unless the employer has received a controlled substance test result from the Medical Review Officer (MRO) or Consortium/Third Party Administrator (C/TPA) indicating a verified negative drug test results for that driver.” Therefore, a negative pre-employment test result is required for each of the following:

- (1) Prospective CDL employees (must receive a negative test result prior to employment)
- (2) Non-CDL employees that transfer to a CDL position or assume CDL duties
- (3) CDL employees that are unavailable for random testing for more than 30 consecutive calendar days for any reason (sick leave, extended vacation, loss or suspension of CDL, removed from the testing pool, etc.)
 - a. These employees are permitted to return to work prior to receiving a negative pre-employment test, but they are not permitted to perform any safety sensitive functions (defined in paragraph 1 of this section) until a verified negative test result is obtained.

NOTE: Allowing employees to engage in any safety sensitive duties prior to receiving a negative pre-employment test is a violation of the federal regulations. Employees returning to transitional duty work that excludes safety sensitive functions should not be sent for the pre-employment drug test until they are medically cleared to resume safety sensitive functions.
 - b. These employees must not be subjected to random drug testing until a pre-employment drug test is performed.

- D. Random Test

- (1) Employees operating CDL equipment must be in a testing pool from which names will be periodically drawn for drug and alcohol testing.
- (2) OA will notify the District Safety Coordinator of the employees selected for a random drug test amongst the district. The District Safety Coordinator then separates the names amongst the counties and notifies the County CDL coordinator and County Manager for each county.
- (3) Employees selected for random testing must not be given advanced notification of the test. Notification should not occur until just prior to going for the test, allowing only enough time for the employee to arrive at the collection facility for their appointment. Advance notification can give employees enough time to take actions that will interfere with the testing process, possibly resulting in false test results.
- (4) Employees selected for random testing should have their tests administered within three business days of the organization being notified. If the employee cannot be tested within three days or will not be tested at all, the Employee Safety and Training Division must be notified.
- (5) CDL – Federal Requirements for Drug & Alcohol Testing: This section briefly describes a mandatory testing program administered by the Governor’s Office of Administration in accordance with Management Directive 505.34, Commercial Driver License Drug and Alcohol Testing Requirements and Manual 505.5 Commercial Driver License Drug and Alcohol Testing and Related Procedures.
 - a. Federal regulations require drug and alcohol testing of employees whose positions require them to possess a CDL and who perform safety sensitive duties. Federal regulations provide for drug/alcohol tests of such employees in the following situations: pre-employment, random, reasonable suspicion, post-accident,

return-to-duty, and follow up. Employees that are not required to possess a CDL will be referred to as Non-CDL employees in this section.

- b. When testing is required, employees must take the Drug and Alcohol Testing Program Federal Cover Sheet and the Federal Drug Testing Custody and Control Form (drug test only) with them to the collection site.
- c. Pre-Employment Test (drug only)

The Federal Motor Carrier Regulations Title 49, Part 382.301(a) states in part that “No employer shall allow a driver, who the employer intends to hire or use, to perform safety-sensitive functions unless the employer has received a controlled substance test result from the MRO or C/TPA indicating a verified negative drug test results for that driver.” Therefore, a negative pre-employment test result is required for each of the following:

- I. Prospective CDL employees (must receive a negative test result prior to employment)
 - II. Non-CDL employees that transfer to a CDL position or assume CDL duties
 - III. CDL employees that are unavailable for random testing for more than 30 consecutive calendar days for any reason (sick leave, extended vacation, loss or suspension of CDL, removed from the testing pool, etc.)
- d. These employees are permitted to return to work prior to receiving a negative pre-employment test, but they are not permitted to perform any safety sensitive functions (defined in paragraph 1 of this section) until a verified negative test result is obtained.

NOTE: Allowing employees to engage in any safety sensitive duties prior to receiving a negative pre-employment test is a violation of the federal regulations. Employees returning to transitional duty work that excludes safety sensitive functions should not be sent for the pre-employment drug test until they are medically cleared to resume safety sensitive functions.

- e. These employees must not be subjected to random drug testing until a pre-employment drug test is performed.
- (6) The Bureau of Human Resource Field Operations has reviewed job codes within the department which operate or may have occasion to operate CDL equipment.

Three categories have been identified to determine what action an organization must take to ensure an employee is either added or removed from the CDL drug and alcohol testing pool:

Category 1: Employees whose job specifications require operation of CDL equipment;

Category 2: Employees whose job duties require operation of CDL equipment for PennDOT; and,

Category 3: Employees not required to operate CDL equipment by job specification or position description but who maintain CDL licenses and operate CDL equipment.

a. Employees whose job specifications require operation of CDL equipment

Employees with the following job codes are required to operate CDL equipment and will be placed in the testing pool automatically. This occurs because the CDL license requirement is coded to the Job Code or classification in SAP.

JOB CODE	JOB TITLE
10631	Bridge Inspection Crane Technician
10632	Bridge Inspection Crane Technician Supervisor
92310	Drill Operator
92320	Drill Operator Supervisor
92132	Training Site Administrator
91380	Transportation Equipment Operator A
91400	Transportation Equipment Operator B
92131	Transportation Equipment Operator Instructor
91405	Transportation Equipment Operator Specialist
91360	Transportation Equipment Operator Trainee
91410	Tunnel Maintainer
91420	Tunnel Maintainer Supervisor

b. Employees whose job duties require operation of CDL equipment for PennDOT, commonwealth job specifications for the following job codes do not require employees in these job codes to hold a valid Pennsylvania CDL. However, within PennDOT, these job codes have been identified as having the occasion to operate CDL equipment and all employees in these jobs in PennDOT must hold a valid Pennsylvania CDL and must be placed in the drug and alcohol testing pool. In addition, it is imperative that these employees be provided the Employee Guide to CDL Drug and Alcohol Testing and a training acknowledgement form is secured in their Electronic Official Personnel File (E-OPF).

The CDL requirement must be coded to the position for these job codes. Human Resource Offices must ensure all new positions have the CDL requirement coded.

JOB CODE	JOB TITLE
93180	Automotive Equipment Supervisor 1
93130	Diesel and Construction Equipment Mechanic
93133	Diesel and Construction Equipment Mechanic Instructor
93021	Highway Equipment Manager 1
93022	Highway Equipment Manager 2
93024	Highway Equipment Manager 3
09341	Transportation Automotive Equipment Specialist

- c. Employees not required to operate CDL equipment by job specification or position description but who maintain CDL licenses and operate CDL equipment.

Employees possessing a valid CDL and who are permitted to operate CDL equipment (even if the employee only operates CDL equipment occasionally or in an emergency) must have the CDL requirement added to their position to ensure they are in the drug and alcohol testing pool. Justification will be required for employees in this category to be permitted to operate CDL equipment and placed in the pool.

If an employee in this category no longer operates CDL equipment or the position is filled by an employee who does not operate CDL equipment, the CDL requirement must be removed from the position. This will require constant review as position movement occurs.

Important Requirements for All Categories of CDL Employees:

Upon initial entry into the testing pool, a pre-employment drug test must be performed yielding a negative result before operation of CDL equipment may be permitted.

If an employee in the testing pool has been unavailable for random testing for 30 or more consecutive calendar days (usually because the employee is on a form of leave), a pre-employment drug test must be performed yielding a negative result before operation of CDL equipment may be permitted.

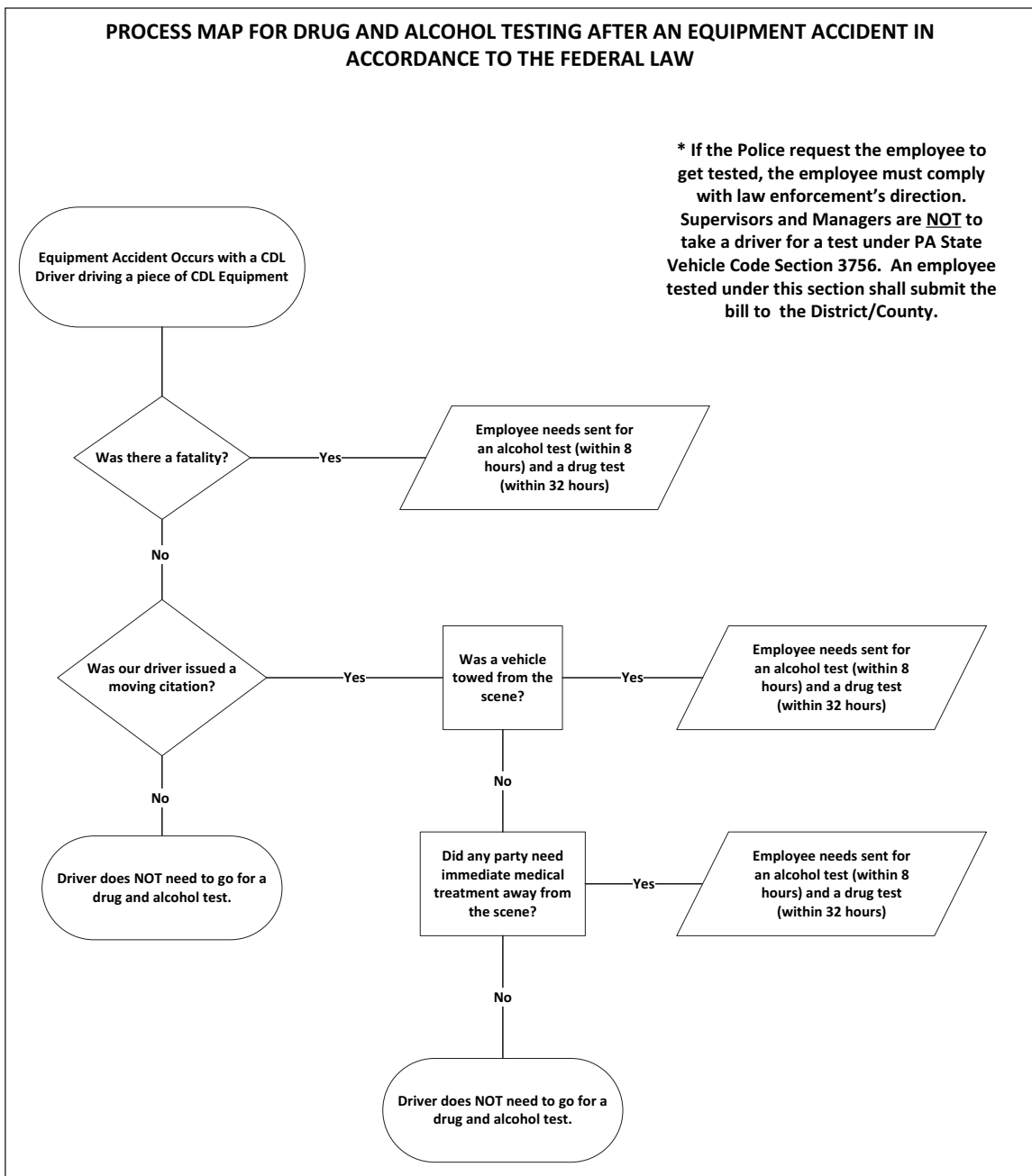
All employees being placed into the CDL drug and alcohol testing pool must be provided the Employee Guide to CDL Drug and Alcohol Testing. A training acknowledgement form must be secured and placed in the E-OPF. Training completion codes must be documented in SAP as well.

E. Reasonable Suspicion Test

- (1) When an agency supervisor/manager has reasonable suspicion to believe an employee has violated the alcohol or controlled substance prohibitions, the employee must be required to submit to a reasonable suspicion alcohol and/or controlled substance test. It is imperative to the integrity of the reasonable suspicion test that the process not be unnecessarily delayed once it's established that the employee should be tested.
- (2) PennDOT follows the reasonable suspicion testing procedure outlined in Manual 505.5, Section 2, Number 3 on pages 9-11. The Manual states: "Reasonable suspicion is determined through the personal observation of the employee by a supervisor/manager who has received the required CDL supervisor training (78BHR3200057), and must be based on specific contemporaneous, articulable observations concerning the appearance, behavior, speech, or body odors of the employee."
- (3) The following procedures are to be used by a supervisor/manager in situations where an employee appears to be under the influence of alcohol and/or drugs. At least one of the supervisors or managers involved must have received the required CDL supervisor training.
 - a. Determine in person if an employee "appears" to be under the influence of alcohol, drugs, or both.
 - b. If the supervisor/manager believes that the employee may be under the influence, conduct an interview with the employee using Part 1 of the Reasonable Suspicion Checklist (M505.5, page 19). If requested by the employee, allow a union representative, if available, to be present during the interview. If available, have another supervisor or manager also participate in the interview. Ask the questions in the sequence indicated and record the employee's answers on the form. If another supervisor or manager is participating, that individual should document the employee's answers on a separate Reasonable Suspicion Checklist.
 - c. Each supervisor/manager should then document their visual observations of the employee's appearance and behavior using Part 2 of the Reasonable Suspicion Checklist.

- d. After the interview, each supervisor/manager should complete Part 3 of the Reasonable Suspicion Checklist, documenting their opinion regarding whether the employee is under the influence and/or is fit for duty, sign and date the form and have the other supervisor/manager (if one was available) witness the signature.
- e. If the supervisor/manager concludes that the employee does not appear to be under the influence of alcohol and/or drugs and can perform, the employee should be returned to work duties.
- f. If the supervisor/manager concludes that the employee is not under the influence of alcohol and/or drugs but is not fit to perform work duties, the Infrastructure and Economic Development Delivery Center, Employee Relations and Workforce Support Division, should be contacted to determine the appropriate actions to be taken.
- g. If the supervisor/manager concludes that the employee is unfit for duty due to the possible influence of alcohol, drugs, or both, then the employee must be escorted (transported) for a reasonable suspicion test. The reasonable suspicion test is to be conducted even if the employee admits to using drugs and/or alcohol. Contact the test site to ensure availability of a staff member of the same gender to witness the collection for testing. It is unnecessary to contact additional management (county manager, ADE, DE, etc.), the Infrastructure and Economic Development Delivery Center or the Human Resource Field Operations Division for permission to take the employee for reasonable suspicion testing. A courtesy notification may be provided to the County Manager and local Human Resource Field Operations Division office once the employee has been taken for testing.
 - I. Reasonable suspicion testing for alcohol may be done only when the observations are made immediately before, during or immediately after the performance of safety sensitive duties.
 - II. Reasonable suspicion testing for drugs may be done at any time, including prior to the start of duties of that work shift.
 - III. If a reasonable suspicion alcohol test is not administered within two hours following the supervisor's observations, the supervisor must prepare and maintain on file a record stating the reasons the alcohol test was not administered promptly.
 - IV. If the reasonable suspicion drug and/or alcohol test is not administered within eight hours, the supervisor must cease attempts to have the tests administered and must prepare and maintain on file a record stating the reasons the alcohol and/or drug test was not administered promptly.
 - V. Only use the collection sites on the network site list during the hours shown on the list. Contact the testing vendor to make the testing arrangements for second and third shift employees.
- h. An employee who is taken for a reasonable suspicion drug and/or alcohol test must be immediately removed from safety sensitive duties and cannot be returned to those duties until a negative result from the reasonable suspicion test is received. The employee may use annual leave (leave code A), or an unpaid approved leave without pay (leave code AO) until that result is received. If the drug test result is negative, the employee shall be made whole for any wages lost or paid leave used.
- i. If the employee refuses to be tested or cooperate in the testing process, this is a refusal to test, which is equivalent to a positive test. The supervisor/manager should verbally communicate to the employee that the refusal is considered a positive result and carries the same consequences. If the employee refuses to be tested, please notify Human Resources immediately as additional actions will need to be taken. The employee cannot remain at work. The supervisor/manager must make necessary arrangements to have the employee taken home. The employee cannot be permitted to drive.

- j. After the collection process the supervisor/manager is to make necessary arrangements to have the employee taken home. The employee cannot be permitted to drive. If the employee refuses those arrangements and attempts to drive, do not attempt to restrain the employee but contact local law enforcement to report the circumstances.
- F. Return-to-Duty Test
- (1) Required for any employee to return to operation of a CDL vehicle or safety sensitive functions following a positive drug or alcohol test.
 - (2) Return-to-Duty test must be a verified negative result for the employee to return to safety sensitive functions.
 - (3) All employees receiving Return-to-Duty tests must be escorted by PennDOT personnel and observed by collection site staff.
- G. Follow Up Test
- (1) Required after an employee produces a positive drug/alcohol test.
 - (2) Frequency and duration of testing is at the discretion of the Commonwealth Substance Abuse Professional.
 - (3) Minimum of six tests must occur within one year.
 - (4) Maximum duration of testing is five years.
 - (5) Employees selected for follow up testing must not be given advanced notification of the test. Notification should not occur until just prior to going for the test, allowing only enough time for the employee to arrive at the collection facility for their appointment. Advance notification can give employees enough time to take actions that will interfere with the testing process, possibly resulting in false test results.
 - (6) Employees selected for follow up testing should have their tests administered within three business days of the organization being notified. If the employee cannot be tested within three days or will not be tested at all, the Employee Safety and Training Division must be notified.
 - (7) All employees receiving a follow up test must be observed by collection site staff.
- H. Post-Accident Test
- (1) If an employee is involved in a collision while operating a vehicle that requires a CDL, post-accident drug and alcohol testing may be required by federal law. Testing is required when:
 - a. There is a fatality (any party involved), or
 - b. The PennDOT operator receives a moving citation, and:
 - I. Any vehicle needs towed from the scene, or
 - II. Any party needs immediate medical treatment away from the scene.
 - (2) If involved in an accident requiring testing, operators must not consume alcohol until the testing is completed. Testing should occur as soon as possible. If the alcohol test is not administered within two hours, the reason for the delay must be documented. Testing must be cancelled if it does not occur within eight hours for alcohol or 32 hours for drugs and the employer must document the reason.
- NOTE: Section 3756 of the Pa. State Vehicle Code requires the police officer investigating the accident to request that drivers of commercial motor vehicles submit to alcohol and controlled substance testing. Under these circumstances, the employee must be given time to be tested but must not be taken/escorted by the employer. The employee must not be given a Drug and Alcohol Testing Program Federal Cover Sheet and Federal Drug Testing Custody and Control Form. The employee shall submit the invoice to the employer, and the employer is responsible for payment directly to the service provider. Test results must be sent to the requesting police department, not to the employer.



I. Safety Sensitive Functions

Per Federal Motor Carrier Safety Regulations, the following on duty functions cannot be performed by a CDL employee who tests positive for drugs or alcohol:

- (1) Driving a commercial motor vehicle.
- (2) Waiting to be dispatched at a carrier or shipper plant, terminal, facility, or other property, unless the driver has been relieved from duty by the employer.
- (3) Inspecting equipment as required by the Federal Motor Carrier Safety Regulations or otherwise inspecting, servicing, or conditioning any commercial vehicle at any time.
- (4) Being in or on a commercial motor vehicle (except for time spent in a sleeper berth).
- (5) Loading or unloading a commercial motor vehicle, supervising or assisting in the loading or unloading, attending a vehicle being loaded or unloaded, remaining in readiness to operate the vehicle, or in giving or receiving receipts for shipments loaded or unloaded.
- (6) Repairing, obtaining assistance, or remaining in attendance upon a disabled vehicle.

- J. The following is true for employees who test positive, refuse to test, or submit an adulterated sample:
- (1) If their employment is not terminated, they are required to participate in the State Employee Assistance Program (SEAP) to retain their employment. An employee who fails to participate and comply with all recommendations will be subject to discipline, up to and including discharge from employment.
 - (2) They may not return to safety sensitive duties until cleared by a SEAP substance abuse professional.
- K. Communication Procedures
- (1) The Field Business Partner, Employee Relations and Workforce Support Coordinator, and the District Safety Coordinator are the CDL contacts for each district with one identified as the primary contact.
 - (2) Each district has an Outlook mailbox that will need to be added to the users list of mail folders. The mailbox name for each district is: PD, CDL District #. District contacts will be given access to the mailbox and will be required to check the mailbox daily.
 - (3) Each district shall designate and maintain a minimum of three CDL contacts in each of their respective counties selected from the County Manager, Assistant County Manager, Equipment Manager, or Roadway Programs Coordinator.
 - (4) The district shall relay information from the secured mailbox to the county contacts. Counties will not have access to the secured mailbox.
 - (5) Counties shall contact the district office regarding any information about test results.
 - (6) An Office of Administration representative sends results for pre-employment drug tests, reasonable suspicion tests, return-to-duty tests, and all positive tests, and lists of employees selected for random and follow up tests to the secured mailbox of the Labor Relations representative.
 - (7) The Labor Relations representative promptly forwards this information to the corresponding district's secured mailbox.
 - (8) Upon receiving an email, the district contacts promptly forward this information via email to the designated CDL contacts in the corresponding counties.
 - (9) The Medical Review Officer (MRO) has a list of the district contacts and will notify the district via telephone of all positive tests. The MRO will speak only to those whose names appear on the list. The district office shall be responsible for relaying positive test information to the respective county.
- L. Forms and Collection Sites
- (1) The Drug and Alcohol Testing Program Federal Cover Sheet and a current list of approved collection sites are accessible on the shared drive at:
P:\PENNDOT_SHARED\BHR EE SAFETY and TALENT DEVELOPMENT\CDL DRUG & ALCOHOL TESTS
 - (2) A supply of the Federal Drug Testing Custody and Control form can be requested by and will be distributed to the district office for use in the district and distribution to the counties.
 - (3) The CDL Employee Prescription Medications form must be submitted by CDL employees any time they are prescribed medication that may impair their ability to operate motorized vehicles or equipment. It is available as Appendix B of the Employee Guide to CDL Drug and Alcohol Testing, which is accessible online at: <http://www.hrm.oa.pa.gov/workplace-support/drug-alcohol-test/Documents/cdl-employee-drug-alcohol-guide.pdf>.

M. Training Requirements

(1) Employees

- a. All employees covered by the CDL regulations will receive a copy of the Employee Guide to CDL Drug and Alcohol Testing, which explains the requirements, policies, and procedures of the drug and alcohol testing program, including prohibitions, consequences, and information on the effects and symptoms of drug and alcohol use.
- b. Employees are required to sign the Employee Education/Training Acknowledgement (Appendix C of the Employee Guide to CDL Drug and Alcohol Testing) indicating they have received the Employee Guide to CDL Drug and Alcohol Testing. If employees refuse to sign the certificate, they may be subject to appropriate disciplinary action. The commonwealth will provide affected collective bargaining agreement representatives with copies of the educational materials.
- c. Upon receipt of the Employee Guide to CDL Drug and Alcohol Testing, the appropriate qualification (50411362) must be added to the employee's record (IT0024) to indicate that the training has been completed.
- d. The signed Employee Education/Training Acknowledgement is maintained in each Electronic Official Personnel File (E-OPF).

(2) Supervisors

- a. All immediate supervisors of CDL covered employees, and all other supervisors who may be involved in making "reasonable suspicion" decisions as to whether a CDL covered employee may be fit for duty and should receive a drug and/or alcohol test, are required to:
 - I. Attend CDL supervisory training at their first opportunity and complete any subsequent training, as needed.
 - II. Receive at least 60 minutes of training on alcohol misuse and at least 60 minutes of training on controlled substance use. The training will cover the physical, behavioral, speech, and performance indicators of probable alcohol misuse and use of controlled substances.
- b. Upon completion of the required CDL supervisory training, the appropriate qualification (50411363) must be added to the employee's record (IT0024) to indicate that the training has been completed.
- c. The signed certification of supervisor training is maintained in the individual's Electronic Official Personnel File (E-OPF).

N. Questions regarding this section, including the CDL related testing process, policies, procedures, and training should be directed to the Commonwealth CDL Drug/Alcohol Program Coordinator in the Office of Administration, Office of Human Resources Management (OA/HRM), Bureau of Employee Benefits and Services, IEDHRDC Employee Relations and Workforce Support Division at 717-787-8575.

5. Driver License Requirements and Record Checks Process

- A. The Employee Safety and Training Division administrates the driver license record check process described in this section, as follows:
 - (1) Provides training, resources, and guidance to authorized staff.
 - (2) Performs random audits of the proper handling of record checks by the districts. If issues are identified as part of the random audit, the Employee Safety and Training Division will notify the Field HR Business Partner in writing of the issue and copy the Employee Relations and Workforce Support Division. In this correspondence, the Employee Safety and Training Division will request a follow up response from the district as deemed necessary.
 - (3) Maintains a current listing of driver privilege status codes and other driver license codes to assist with the interpretation of driver record information.

- B. Employees who operate a PennDOT vehicle, a piece of equipment (hereafter referred to as vehicle), or a personal vehicle for PennDOT business purposes must have a valid driver license of the appropriate class, as well as any other necessary credentials, (e.g. possess endorsements and/or have restrictions lifted). As the responsible agency for licensing Pennsylvania drivers, it is imperative that our employees exemplify our mission by being in possession of valid driver credentials, especially in the performance of PennDOT duties. Employees who do not possess a valid license and drive on PennDOT business, present a liability to PennDOT.
- C. When an employee's position includes driving duties, they may be subject to disciplinary action in accordance with the PennDOT Working Rules if the employee operates a PennDOT vehicle or operates a personal vehicle for PennDOT business (during one's regularly scheduled work hours or otherwise) without a valid driver license of the appropriate class.
- D. Employees in positions that require the possession of a Class A or B commercial driver license are required to produce a valid driver license upon request from a supervisor/manager. Failure to do so immediately upon request may result in disciplinary action. Additionally, discipline may result for employees required to have a driver license per the job specification, who have an invalid license for a period, but do not operate a vehicle on PennDOT business during that time.
- E. To monitor compliance, pre-employment and monthly driver license records checks are conducted by authorized Field HR Business Partner staff for the respective district office and County Maintenance Organization employees, and by authorized Employee Safety and Training Division staff for all other employees. If the authorized staff is not available to perform driver license records checks, the District Human Resource Officer (HRO) must alert the Employee Safety and Training Division in advance, so that they can run the checks for district organizations in a timely manner.
 - (1) Pre-Employment Driver License Record Check

Specific driver license records checks are required for tentatively selected job applicants that are required to possess a valid driver license for the position they are being considered. This process should be performed on an as needed basis during the placement process prior to making a job offer. Individual driver licenses are checked by accessing the PennDOT Driver Records System Customer Inquiry Screen. Instructions for conducting these checks are provided by the Employee Safety and Training Division to those authorized to do so.

 - a. Any candidate tentatively selected for a position who is required to possess a valid driver license shall be subject to a driver license records check prior to a final offer of employment being made. The staff authorized to run the report shall be given access to the change to Business Account Driver Record (BADR) system of the candidate's driver license record. Per Office of Chief Counsel, it is not necessary to have candidates complete DL Form 503 Request for Driver Information for us to perform the driver license check. Bureaus should contact the OA Bureau of Organization Management, Position Classification Services Division to obtain driver record information on candidates for positions that require the possession of a driver license.
 - I. For positions that only require a Class C noncommercial driver license, it is only necessary to verify that the candidate's license is valid without any pending adverse actions. The candidate's driver history should not be reviewed in these instances.
 - II. For positions that require a commercial driver license, pre-employment background checks are required consistent with the Federal Motor Carrier Regulations, Parts 382, 383 and 391 (reference Administrative Manual 505.5). Therefore, it is necessary to verify that the candidate's license is not under an adverse action or pending adverse action and it is also necessary to review driver history. If the driver history check reveals that a candidate has had a driving infraction, (e.g. speeding ticket, DUI, hit and run) appropriate consideration must be given to this in the hiring decision, including the type of infraction, frequency of infractions, and the time elapsed since the infraction(s) in order to determine whether the candidate poses a potential safety risk. It is expected that sound and consistent judgment will be applied to minimize the likelihood of hiring candidates that could reasonably pose

such a risk. If the driver record check is a determining factor in not hiring a candidate, the documentation should be reviewed by the Field HR Business Partner and OA Bureau of Organization Management, Position Classification Services Division for concurrence.

- b. Any candidate for a position that requires the possession of a driver license should not be hired if they have a current or pending adverse action against their driver license or an invalid license.
- c. Prior to hiring any candidate for a position that requires a Class A or B commercial driver license, and has a driving infraction that includes a pending criminal charge or criminal conviction, approval to appoint a candidate with a criminal conviction must be obtained from the Office of Administration. Additionally, if the decision is made to not hire a candidate based on a criminal conviction, concurrence must first be obtained from the Employee Relations and Workforce Support Division and Office of Chief Counsel before the candidate is notified. Factors to consider include the type of criminal offense, its nexus to the position, the offense level, the frequency of past offenses, and how much time has elapsed since the offense.

(2) Report 1

This monthly driver license record check is run on the first business day of each month and tracks information for employees required to possess a driver license or employees assigned a commonwealth vehicle.

- a. Report 1 comprises the PERS Employee DL&C Record Check report and entails checking whether the driver license is valid, (i.e. expiration date and whether there is a current/pending adverse action against an employee's driver license). Examples of adverse actions include: suspension, revocation, cancellation, restriction, recall, or CDL disqualification. Additionally, if there is reason to believe that an employee in any of these employees is not in possession of a valid license, a random check of that employee's driver license record is permitted.
- b. The requirement to possess a specific class of license is based on a necessary special requirement in certain job specifications described in this section.
 - I. Table 1: Employees in job titles that require possession of a Class A or B CDL.
 - II. Table 2: Employees in job titles that require possession of a Class C driver license.
- c. Report 1 displays the following fields:
 - I. Driver License Number
 - II. Driver Name
 - III. Employee Number
 - IV. Employee Job Code
 - V. Endorsements
 - VI. License Expired Indicator
 - VII. Expiration Date (only if expired)
 - VIII. Driver License Class Codes
 - IX. Driver Privilege Status Codes

- d. The staff authorized to run Report 1 is required to check for employee's driver licenses that are expired, suspended, revoked, cancelled, restricted, recalled, or when a CDL is disqualified and immediately provide direction to the employee's chain of command with notification to the District Employee Relations and Workforce Support Coordinator or Employee Relations and Workforce Support Division. The Employee Safety and Training Division will report the same to the Employee Relations and Workforce Support Division and the employee's Bureau Director of Maintenance employees.
- e. Any incident of an employee operating a vehicle on PennDOT business without a valid license or the loss of one's operating privileges will be handled in accordance with PennDOT Working Rules and PPIM 13-024 Employee Loss of Operating Privilege.

(3) Report 2

This monthly driver license record check is run on the first business day of each month and tracks information for employees in positions for which a driver license may be necessary to accomplish one's duties and/or employees that are known to travel on PennDOT business on a more than occasional basis (although not required to possess a driver license by the respective job specification).

- a. Report 2 comprises the PERS Employee DL&C Record Check report and entails checking whether the driver license is valid, (i.e. expiration date, and whether there is a current/pending adverse action against an employee's driver license). Examples of adverse actions include suspension, revocation, cancellation, restriction, recall, or CDL disqualification. Additionally, if there is reason to believe that an employee in any of the above is not in possession of a valid license, a random check of that employee's driver license record is permitted.
- b. Report 2 displays the following fields:
 - I. Driver License Number
 - II. Driver Name
 - III. Employee Number
 - IV. Employee Job Code
 - V. License Expired Indicator
 - VI. Expiration Date (only if expired)
 - VII. Driver Privilege Status Codes
- c. The staff authorized to run the report is required to check for employee's driver licenses that are expired, suspended, revoked, cancelled, restricted, recalled, or when a CDL is disqualified. The District Employee Relations and Workforce Support Coordinator or Employee Relations and Workforce Support Division should be consulted immediately in order to determine how to proceed. Following a determination, the District Employee Relations and Workforce Support Coordinator will provide direction to the employee's chain of command. The Employee Safety and Training Division will report the same to the Employee Relations and Workforce Support Division and the employee's Bureau Director of Maintenance employees. Any incident of an employee operating a vehicle on PennDOT business without a valid license or the loss of one's operating privileges will be handled in accordance with PennDOT Working Rules and PPIM 13-024 Employee Loss of Operating Privilege.
- d. Table 3 is the list of job titles that is used when running Report 2 for all organizations.

- (4) Occasionally, it is operationally necessary to require employees to possess a driver license to assist with winter operations even if this requirement is not included in the specifications for their job title, (e.g. Maintenance Repairman 2 and Driver License Examiner). These instances are determined by individual job duties assigned to a position and require careful analysis of Reports 1 and 2 to ensure that the affected employees possess valid driving credentials required for their assigned duties.

F. Expirations and Adverse Actions

- (1) Driver license record information should only be shared with management staff for questioning the respective employee after an expiration of operating privileges or the day prior to an adverse action against an employee's license.
- (2) Reports shall not be used to give notification to employees of a pending adverse action.
- (3) License expirations are not to be addressed until the monthly report following the month in which the license expired. Following notification from the Employee Safety and Training Division or the Human Resource Field Operations Division that an employee's driver license expired, immediate action must be taken to ensure that the employee ceases operating any vehicle until they produce a valid license and the validity of the license is verified in Reports 1 and 2.
- (4) Managers should address an adverse action with the employee on the day prior to the adverse action effective date. In addition to the potential for discipline for operating without a valid license, employees may be subject to discipline in accordance with PennDOT Working Rules and PPIM 13-024 Employee Loss of Operating Privilege.

G. Systems and Confidentiality

- (1) All driver license record checks and reports are conducted using the PennDOT Driver Licensing and Control database and the ITOM. Individual driver licenses are checked by accessing the PennDOT Driver Records System Customer Inquiry Screen.
- (2) All driver record information is to be kept confidential and is only to be used to obtain information on current and prospective employees for the purposes identified in this policy. Anyone requesting access to the involved systems must sign Safety Administration's Confidentiality Policy prior to being given such access.
- (3) Any unauthorized access, misuse or inappropriate release of information, or other violation of this policy may result in disciplinary action up to and including discharge.

H. Guidance

- (1) Questions concerning the pre-employment driver record checks, Reports 1 and 2, and access to and use of ITOMS and BADR systems should be directed to the Employee Safety and Training Division.
- (2) Questions concerning the application of policies regarding employee loss/restriction of license and/or otherwise not being in possession of a valid license should be directed to the Employee Relations and Workforce Support Division.
- (3) Questions concerning hiring decisions relative to an applicant's driver license record should be directed to the OA Bureau of Organization Management, Position Classification Services Division.

Table 1 – Employees required to possess a class A or B commercial driver license	
Code	Job Title
93160	Automotive Vehicle and Equipment Inspector
10631	Bridge Inspection Crane Technician
10632	Bridge Inspection Crane Technician Supervisor
93133	Diesel and Construction Equipment Mechanic Instructor
93130	Diesel and Construction Equipment Mechanic
93129	Diesel and Construction Equipment Mechanic Trainee ¹
92310	Drill Operator
92320	Drill Operator Supervisor
92132	Training Site Administrator
91380	Transportation Equipment Operator A
91400	Transportation Equipment Operator B
92131	Transportation Equipment Operator Instructor
91405	Transportation Equipment Operator Specialist
91360	Transportation Equipment Operator Trainee ²
91410	Tunnel Maintainer
91420	Tunnel Maintainer Supervisor

¹ Certain positions require possession of an active Pennsylvania Class A or B Commercial Driver Learner's Permit or License on the first day of employment.

² All employees must possess an active Pennsylvania Class A or B Commercial Driver Learner's Permit on the first day of work.

Table 2- Employees required to possess a class C non-commercial driver license	
Code	Job Title
91330	Assistant Highway Maintenance Manager
17181	Chief Real Estate Appraiser
71041	Driver License Center Supervisor
71042	Driver License District Manager
71040	Driver License Examiner
71043	Driver License Regional Manager
92100	Equipment Operator A
92101	Equipment Operator B
17165	General Real Estate Appraiser
14900	Geologic Trainee
14921	Geoscientist
91010	Highway Foreman 1
91020	Highway Foreman 2
91030	Highway Foreman 3
91340	Highway Maintenance Manager
14931	Licensed Professional Geologist
17151	Licensed Real Estate Appraiser Trainee
17171	Real Estate Appraisal Reviewer
17161	Real Estate Appraiser

Table 2- Employees required to possess a class C non-commercial driver license (Continued)	
Code	Job Title
17148	Real Estate Specialist
17147	Real Estate Technician
91350	Senior Highway Maintenance Manager
93000	Tradesman Helper

Table 3 – Employees who travel on PennDOT business or perform driving duties	
Code	Job Title
03020	Accountant 1
03030	Accountant 2
03040	Accountant 3
03050	Accountant 4
03000	Accounting Assistant
U0041	Acting Deputy Secretary
08010	Administration & Management Trainee
08210	Administrative Assistant 1
08220	Administrative Assistant 2
08630	Administrative Officer 1
08640	Administrative Officer 2
08650	Administrative Officer 3
08660	Administrative Officer 4
08670	Administrative Officer 5
75450	Air Quality Program Specialist
93240	Aircraft Inspector
93230	Aircraft Mechanic
U8611	Alternative Revenue Program Director
01521	Applications Developer 1
01522	Applications Developer 2
01525	Applications Developer Administrator
13310	Architectural Designer 1
13320	Architectural Designer 2
13300	Architectural Designer Trainee
13350	Architectural Supervisor
96550	Artist Illustrator 1
96560	Artist Illustrator 2
96570	Artist Illustrator 3
11711	Assistant District Maintenance Administrator
11683	Assistant for Strategic Management Transportation
11710	Assistant Highway District Engineer
07111	Attorney 1, OGC
07121	Attorney 2, OGC
07131	Attorney 3, Non-Supervisory, OGC
07141	Attorney 3, Supervisory, OGC
07151	Attorney 4, Non-Supervisory, OGC

Table 3 – Employees who travel on PennDOT business or perform driving duties (Cont.)	
Code	Job Title
07152	Attorney 4, Supervisory, OGC
07161	Attorney 5, OGC
03624	Audit Manager
03700	Audit Specialist 1
03710	Audit Specialist 2
03720	Audit Specialist 3
03620	Auditor 1
03621	Auditor 2
03623	Auditor Supervisor
03377	Audits Division Chief, Transportation
93180	Automotive Equipment Supervisor 1
93110	Automotive Mechanic ³
09730	Aviation Director Transportation
71750	Aviation Specialist
71760	Aviation Specialist Supervisor
10820	Bridge and Structural Design Manager
10810	Bridge and Structural Design Supervisor
10790	Bridge and Structural Designer
10780	Bridge and Structural Drafter
10781	Bridge and Structural Draftsman Designer
94005	Building Trades Trainee ³
11225	Bureau Director, Highway Administration
01051	Business Analyst 1
01052	Business Analyst 2
01053	Business Analyst 3
01054	Business Analyst 4
94010	Carpenter 1 ³
94020	Carpenter 2 ³
94030	Carpenter Foreman
10530	Cartographic Supervisor
15120	Chemist 1 ³
15130	Chemist 2 ³
15140	Chemist 3 ³
15150	Chemist 4 ³
15110	Chemistry Technician
07234	Chief Counsel 4
U1027	Chief Counsel OGC
U8465	Chief Engineer, DOT
11221	Chief Executive, Highway Administration, DOT
01553	Chief Information Officer ³
15900	Chief of Program Development, Transportation
92230	Chief Pilot
1112B	Civil Engineer (Bridges) ³
1112G	Civil Engineer (General) ³

Table 3 – Employees who travel on PennDOT business or perform driving duties (Cont.)	
Code	Job Title
1112S	Civil Engineer (Structural) ³
1112T	Civil Engineer (Transportation) ³
1116B	Civil Engineer Consultant (Bridges) ³
1116G	Civil Engineer Consultant (General) ³
1116S	Civil Engineer Consultant (Structural) ³
1116T	Civil Engineer Consultant (Transportation) ³
1115B	Civil Engineer Manager (Bridges) ³
1115I	Civil Engineer Manager (General) ³
1115J	Civil Engineer Manager (Hydraulic) ³
1115S	Civil Engineer Manager (Structural) ³
1115T	Civil Engineer Manager (Transportation) ³
11118	Civil Engineer Supervisor ³
11119	Civil Engineer Trainee ³
00101	Clerical Assistant 1
00102	Clerical Assistant 2
00103	Clerical Assistant 3
00190	Clerical Supervisor 1
00200	Clerical Supervisor 2
92220	Commonwealth Pilot
08001	Commonwealth Public Service Intern
05900	Communications Director 1
05910	Communications Director 2
05920	Communications Director 3
01840	Computer Operations Manager 1
01850	Computer Operations Manager 2
01860	Computer Operations Manager 3
01830	Computer Operations Supervisor
01810	Computer Operator 1
01820	Computer Operator 2
11270	Construction Cost Manager
11240	Construction Cost Technician 1
11260	Construction Cost Technician 2
11265	Construction Documentation Specialist
96160	Copy Machine Operator
80210	Custodial Worker 1
80220	Custodial Worker 2
10601	Data Analytics Specialist 1
10602	Data Analytics Specialist 2
10603	Data Analytics Specialist 3
10600	Data Analytics Trainee
01532	Database Administrator 1
01533	Database Administrator 2
01531	Database Analyst
U0030	Department Head

Table 3 – Employees who travel on PennDOT business or perform driving duties (Cont.)	
Code	Job Title
U1080	Deputy Chief of Staff
05820	Deputy Communications Director 1
05830	Deputy Communications Director 2
05896	Deputy Digital Director
U0530	Deputy Secretary Driver & Vehicle Services
U0850	Deputy Secretary for Administration Transportation
U0520	Deputy Secretary for Multimodal Transportation
U0500	Deputy Secretary Highway Administration
U0510	Deputy Secretary Transportation Planning
05897	Digital Director 1
05898	Digital Director 2
28485	Director, Bureau of Rail Freight, Ports, & Waterways
71950	Director, Bureau of Driver Licensing
08541	Director, Bureau of Fiscal Management Transportation
01986	Director, Bureau of IT Project Dev & Delivery, DOT
09660	Director, Bureau of Motor Vehicles
16450	Director, Bureau of Planning and Research, DOT
08530	Director of Program Development & Management, Transportation
08536	Director, Public-Private Transportation Partnership Office
11755	Director, Transportation Innovations
28419	District Environmental Specialist Transportation
11709	District Program Administrator, DOT ³
17385	District Utility Administrator
71039	Driver License Examiner Assistant
07510	Driver Safety Examiner
96370	Duplicating Manager 1
96380	Duplicating Manager 2
13410	Electrical Engineer 1 ³
13420	Electrical Engineer 2 ³
13430	Electrical Engineer Consultant ³
13450	Electrical Engineer Supervisor ³
13400	Electrical Engineer Trainee
94410	Electrician 1 ³
94420	Electrician 2 ³
94430	Electrician Supervisor ³
94405	Electrician Trainee ³
76198	Emergency Management Specialist
12010	Engineering Technician
U2710	Engineering, Scientific, and Technical Intern
15070	Environmental Chemist 1
15080	Environmental Chemist 2
14530	Environmental Engineer ³
14540	Environmental Engineer Manager ³
14535	Environmental Engineering Consultant ³

Table 3 – Employees who travel on PennDOT business or perform driving duties (Cont.)	
Code	Job Title
14520	Environmental Engineering Specialist ³
14510	Environmental Engineering Trainee ³
28415	Environmental Planner 1
28416	Environmental Planner 2
28418	Environmental Planning Manager
28417	Environmental Planning Supervisor
14241	Environmental Program Manager ³
75400	Environmental Trainee
05220	Equal Opportunity Assistant
05224	Equal Opportunity Manager 1
05225	Equal Opportunity Manager 2
05226	Equal Opportunity Manager 3
05221	Equal Opportunity Specialist 1
05222	Equal Opportunity Specialist 2
05223	Equal Opportunity Specialist 3
93080	Equipment Body Repairer and Painter
08260	Executive Assistant
U0535	Executive Deputy Secretary Transportation
03065	Executive Financial Associate
16830	Executive Policy Manager 1
16840	Executive Policy Manager 2
16850	Executive Policy Manager 3
16810	Executive Policy Specialist 1
16820	Executive Policy Specialist 2
00150	Executive Secretary 1
00160	Executive Secretary 2
80245	Facilities Services Supervisor ³
94710	Facility Maintenance Manager 1
94720	Facility Maintenance Manager 2
94730	Facility Maintenance Manager 3
94670	Facility Operations Manager 2 ³
94660	Facility Operations Supervisor
05411	Field Human Resource Officer 1
05412	Field Human Resource Officer 2
05413	Field Human Resource Officer 3
03375	Finance Operations Chief, Transportation
08180	Financial Programs Trainee
00710	Fiscal Assistant
08110	Fiscal Management Specialist 1
08120	Fiscal Management Specialist 2
08130	Fiscal Management Specialist 3
08140	Fiscal Management Specialist 4
08150	Fiscal Management Specialist 5
00720	Fiscal Technician

Table 3 – Employees who travel on PennDOT business or perform driving duties (Cont.)	
Code	Job Title
00730	Fiscal Technician Supervisory
92240	Flight Services and Safety Manager
96520	Forms Designer 2
96580	Forms Layout Specialist 1
96590	Forms Layout Specialist 2
96600	Forms Layout Specialist 3
10502	Geospatial Analyst
10500	Geospatial Specialist 1
10501	Geospatial Specialist 2
U2700	Government Services Intern
96290	Graphic Services Center Manager
00380	Hearing Stenographer
11222	Highway Admin Program Manager 1 ³
11223	Highway Admin Program Manager 2 ³
11224	Highway Admin Program Manager 3 ³
10340	Highway Design Manager
10330	Highway Design Supervisor
10310	Highway Designer
10300	Highway Drafter
10301	Highway Draftsman Designer
93021	Highway Equipment Manager 1 ³
93022	Highway Equipment Manager 2 ³
93024	Highway Equipment Manager 3 ³
91320	Highway Maintenance Coordinator
90020	Highway Maintenance Worker
91110	Highway Sign Worker
26560	Historic Preservation Manager
26540	Historic Preservation Specialist
26550	Historic Preservation Supervisor
0501A	Human Resource Analyst 1 (General)
0501G	Human Resource Analyst 1 (HR Systems)
0502B	Human Resource Analyst 2 (Class & Comp)
0502E	Human Resource Analyst 2 (Emp Benefits)
0502D	Human Resource Analyst 2 (Emp Training)
0502A	Human Resource Analyst 2 (General)
0502G	Human Resource Analyst 2 (HR Systems)
0502F	Human Resource Analyst 2 (Labor Relations)
0503B	Human Resource Analyst 3 (Class & Comp)
0503E	Human Resource Analyst 3 (Emp Benefits)
0503D	Human Resource Analyst 3 (Emp Training)
0503A	Human Resource Analyst 3 (General)
0503G	Human Resource Analyst 3 (HR Systems)
0503F	Human Resource Analyst 3 (Labor Relations)
0504B	Human Resource Analyst 4 (Class & Comp)

Table 3 – Employees who travel on PennDOT business or perform driving duties (Cont.)	
Code	Job Title
0504E	Human Resource Analyst 4 (Emp Benefits)
0504D	Human Resource Analyst 4 (Emp Training)
0504A	Human Resource Analyst 4 (General)
0504G	Human Resource Analyst 4 (HR Systems)
0504F	Human Resource Analyst 4 (Labor Relations)
0505B	Human Resource Analyst 5 (Class & Comp)
0505E	Human Resource Analyst 5 (Emp Benefits)
0505D	Human Resource Analyst 5 (Emp Training)
0505A	Human Resource Analyst 5 (General)
0505G	Human Resource Analyst 5 (HR Systems)
0505F	Human Resource Analyst 5 (Labor Relations)
05620	Human Resource Assistant 1
05630	Human Resource Assistant 2
05095	Human Resource Manager
05323	Human Resources Management Trainee
01517	Information Security Specialist 1
01518	Information Security Specialist 2
01519	Information Security Specialist 3
01984	Information Tech. Policy and Planning Manager
01606	Information Technology Associate
01544	Information Technology Gen Administrator 1
01545	Information Technology Gen Administrator 2
01541	Information Technology Generalist 1
01542	Information Technology Generalist 2
01546	Information Technology Manager 1
01547	Information Technology Manager 2
01548	Information Technology Manager 3
01981	Information Technology Policy Associate 2
01982	Information Technology Policy Specialist 1
01983	Information Technology Policy Specialist 2
01510	Information Technology Technician
01605	Information Technology Trainee
05720	Information Writer
71271	Labor and Contract Compliance Agent
71272	Labor and Contract Compliance Coordinator
90110	Labor Foreman 1 ³
90120	Labor Foreman 2 ³
90010	Laborer
10410	Landscape Designer 1
10420	Landscape Designer 2
10430	Landscape Designer Supervisor
07100	Law Clerk
07010	Legal Assistant 1
07020	Legal Assistant 2

Table 3 – Employees who travel on PennDOT business or perform driving duties (Cont.)	
Code	Job Title
07030	Legal Assistant Supervisor
U2720	Legal Intern
07251	Legislative Aide
07241	Legislative Liaison 1
07242	Legislative Liaison 2
07243	Legislative Liaison 3
07252	Legislative Specialist 1
07253	Legislative Specialist 2
25110	Librarian 1
25120	Librarian 2
25050	Library Technician
93310	Machinist
00640	Mail Production Operator ³
00645	Mail Production Team Leader ³
94610	Maintenance Repairman 1 ³
94620	Maintenance Repairman 2 ³
01010	Management Analyst 1
01020	Management Analyst 2
01040	Management Analyst Manager
01030	Management Analyst Supervisor
08040	Management Technician
10550	Manager Cartographic Services ³
94210	Mason
28300	Mass Transit Analyst 1
28310	Mass Transit Analyst 2
28320	Mass Transit Analyst 3
28330	Mass Transit Analyst Supervisor
28290	Mass Transit Analyst Trainee
28340	Mass Transit Manager 1
28350	Mass Transit Manager 2
16060	Mass Transit Systems Director
01042	Materials and Services Manager Transportation
15550	Materials Manager 1
15560	Materials Manager 2
15540	Materials Supervisor
15520	Materials Technician 1
15530	Materials Technician 2
93120	Mechanic Supervisor ³
13510	Mechanical Engineer 1 ³
13520	Mechanical Engineer 2 ³
13530	Mechanical Engineer Consultant ³
13550	Mechanical Engineer Supervisor ³
13500	Mechanical Engineer Trainee
94450	Medium Voltage Electrician

Table 3 – Employees who travel on PennDOT business or perform driving duties (Cont.)	
Code	Job Title
94460	Medium Voltage Electrician Foreman
U0270	Member of Board or Commission
00010	Messenger
96080	Micrographics Technician
93090	Motor Vehicle Program Inspector
09610	Motor Vehicle Program Supervisor 1
09620	Motor Vehicle Program Supervisor 2
09630	Motor Vehicle Program Supervisor 3
10690	Municipal Services Manager
10670	Municipal Services Specialist
10680	Municipal Services Supervisor
26390	Museum Curator Archeology 1
26400	Museum Curator Archeology 2
26160	Museum Curator History 1
26410	Museum Curator Supervisor Archeology
01514	Network Administrator 1
01515	Network Administrator 2
01511	Network Specialist 1
01512	Network Specialist 2
93710	Office Equipment Repair Technician
08390	Office Services Director Transportation
94510	Painter ³
08100	Pennsylvania Management Associate
12150	Photogrammetry Manager
12149	Photogrammetry Supervisor
12151	Photogrammetry Surveys Manager
12131	Photogrammetry Technician 1
12141	Photogrammetry Technician 2
11684	Planning Division Manager Transportation
94310	Plumber ³
05840	Press Secretary
00650	Print Production Operator ³
00655	Print Production Technician ³
00660	Print/Mail Production Supervisor ³
02710	Procurement Specialist 1
02720	Procurement Specialist 2
02730	Procurement Specialist 3
02740	Procurement Specialist 4
02750	Procurement Specialist 5
08050	Program Analyst 1
08060	Program Analyst 2
08070	Program Analyst 3
08084	Program Analyst 4
08095	Program Analyst 5

Table 3 – Employees who travel on PennDOT business or perform driving duties (Cont.)	
Code	Job Title
01971	Project Manager 1
19723	Project Manager 2
01973	Project Manager 3
02610	Purchasing Agent
02620	Purchasing Agent Supervisor
01130	Radio Telecommunications Specialist 1
01140	Radio Telecommunications Specialist 2
10850	Regional Traffic Management Center Operator
10851	Regional Traffic Management Center Supervisor
17250	Right-Of-Way Administrator 1
17260	Right-Of-Way Administrator 2
17270	Right-Of-Way Administrator 3
11824	Roadside Manager
11821	Roadside Specialist 1
11822	Roadside Specialist 2
11823	Roadside Specialist Supervisor
11800	Roadside Technician 1
11810	Roadside Technician 2
12518	Roadway Programs Coordinator
12515	Roadway Programs Manager 1
12516	Roadway Programs Manager 2
12513	Roadway Programs Specialist
12510	Roadway Programs Technician 1
12511	Roadway Programs Technician 2
12512	Roadway Programs Technician Supervisor
11301	Safety Specialist 1
11302	Safety Specialist 2
11304	Safety Specialist Manager
11303	Safety Specialist Supervisor
11300	Safety Specialist Trainee
U2540	Secondary School Intern
90030	Semi-Skilled Laborer ³
01524	Senior Applications Developer
11715	Senior Assistant District Executive Transportation
10800	Senior Bridge and Structural Designer
1113B	Senior Civil Engineer (Bridges) ³
1113G	Senior Civil Engineer (General) ³
1113H	Senior Civil Engineer (Hydraulic) ³
1113S	Senior Civil Engineer (Structural) ³
1113T	Senior Civil Engineer (Transportation) ³
11161	Senior Civil Engineer Manager ³
1114B	Senior Civil Engineer Supervisor (Bridge) ³
1114I	Senior Civil Engineer Supervisor (General) ³
1114S	Senior Civil Engineer Supervisor (Structural) ³

Table 3 – Employees who travel on PennDOT business or perform driving duties (Cont.)	
Code	Job Title
1114T	Senior Civil Engineer Supervisor (Transportation) ³
10320	Senior Highway Designer
U0192	Senior Policy Manager
10860	Senior Traffic Control Specialist
91213	Sign Shop Manager
91210	Sign Technician 1
91211	Sign Technician 2
91212	Sign Technician Supervisor
75850	Solid Waste Program Specialist
U8580	Special Advisor to the Secretary, Transportation
U0505	Special Advisor, Strategic Transportation Initiatives
70810	Special Investigator 1
70820	Special Investigator 2
70830	Special Investigator 3
05410	Statistical Assistant
05671	Statistician 1
05673	Statistician 2
05680	Statistician 3
05675	Statistician Supervisor 1
05690	Statistician Supervisor 2
02410	Stock Clerk 1
02420	Stock Clerk 2
02430	Stock Clerk 3
02440	Storekeeper 1
02450	Storekeeper 2
12220	Survey Technician ³
12221	Survey Technician Supervisor ³
12290	Surveyor 1
12300	Surveyor 2
10580	Technical Assistant
01190	Telecommunications Administrator
01160	Telecommunications Coordinator
01170	Telecommunications Specialist 1
01180	Telecommunications Specialist 2
01185	Telecommunications Supervisor
70344	Tort Liability Specialist, Transportation
05942	Tourist Information Counselor
05943	Tourist Information Supervisor
10859	Traffic Control Specialist
10863	Traffic Control Specialist Manager
10861	Traffic Control Specialist Supervisor
10858	Traffic Control Specialist Trainee
10840	Traffic Control Technician
10862	Traffic Systems Control Specialist

Table 3 – Employees who travel on PennDOT business or perform driving duties (Cont.)	
Code	Job Title
05880	Transportation Community Relations Coordinator 1
05890	Transportation Community Relations Coordinator 2
10630	Transportation Construction Inspector Supervisor ³
09341	Transportation Automotive Equipment Specialist ⁴
10620	Transportation Construction Inspector ³
10640	Transportation Construction Manager 1
10650	Transportation Construction Manager 2
10660	Transportation Construction Manager 3
11730	Transportation District Executive
13381	Transportation Facilities Management Chief
94741	Transportation Facility Administrator 1
94742	Transportation Facility Administrator 2
94743	Transportation Facility Administrator 3
11682	Transportation Planning Manager
11670	Transportation Planning Specialist 1
11680	Transportation Planning Specialist 2
11681	Transportation Planning Specialist Supervisor
11600	Transportation Planning Specialist Trainee
11659	Transportation Planning Technician
10210	Transportation Technician
17380	Utility Relocation Administrator 1
17390	Utility Relocation Administrator 2
17375	Utility Relocation Specialist
17370	Utility Relocation Technician
02460	Warehouse Superintendent
97311	Wastewater Treatment Plant Chief Operator ³
97310	Wastewater Treatment Plant Operator ³
97281	Wastewater Treatment Plant Operator Trainee ³
97340	Wastewater Treatment Plant Supervisor ³
97300	Water Treatment Plant Operator
97270	Water Treatment Plant Operator Trainee
97330	Water Treatment Plant Supervisor
93410	Welder ³

³ Certain positions require possession of an active Pennsylvania non-commercial Class C driver's license or equivalent

⁴ Certain positions require possession of a valid Pennsylvania driver's license of the class appropriate to the vehicle operated and supplemented by the endorsements required by law for the operation of specific equipment or equivalent.

6. CDL/Hazmat Reimbursement for Fuel Truck Operators

If obtaining or maintaining a Hazmat endorsement is a job requirement for a department CDL driver to operate fuel trucks by a particular district or county, CDL employees operating said vehicles should request signed reimbursement approval from their County Manager prior to the Hazmat certification/renewal. This reimbursement will cover the federal fees portion of the Hazmat reimbursement per current AFSCME contract agreement language. Questions may be directed to your Employee Relations Coordinator or Human Resource Service Center.

7. Program Review

This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

8. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Topic
1	Pub 445 (10-13) Safety Policy Manual, pages 10-11 PPIM 12-145 Safe Driving – No Texting (Issued 3/7/12)
2	PPIM 13-160 Safe Driver Training (Issued 7/11/13)
3	PPIM 16-173 Medical Examiner's Certificate Requirement – Certain CDL Holders (Issued 7/7/19, Effective 8/1/16)
4	Pub 445 (10-13) Safety Policy Manual, pages 6-9 "CDL Drug and Alcohol Testing" PPIM 09-120 CDL Drug & Alcohol Testing Policy (Issued 1/23/09) PPIM 09-124 CDL Pre-Employment Drug Testing (Issued 3/10/09) Original, CDL Reasonable Suspicion Testing Procedure email sent from BHR 9/2/16 Original, Workplace Support Services Division (OA) website Original, Management Directive 505.34 and Manual 505.5
5	PPIM 11-128 Driver License Records Check Process (Issued 1/27/10 and 1/7/11)
6	New, based on Strikeoff Letter 461-12-05
7-8	Original, based on AIPP requirements for protocols

Protocol 14 – Portable Ladder Safety

Section	Topic	Page
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5	Type and Design	P14 - 2
6	Inspection	P14 - 3
7	Selection	P14 - 3
8	Use	P14 - 3
9	Transporting	P14 - 5
10	Storage and Maintenance	P14 - 5
11	Training	P14 - 5
12	Program Review	P14 - 6
13	Recordkeeping	P14 - 6

1. Policy

PennDOT is committed to ensuring that the risks associated with working with and on portable ladders have been adequately and appropriately addressed. This protocol provides PennDOT employees with the basic information for assuring a safe workplace, free from recognized portable ladder hazards which may cause serious injury or death.

2. Scope

This protocol affects all PennDOT employees who utilize and transport portable ladders. Employees are expected to comply with all elements of the PennDOT Portable Ladder Safety Protocol. Employees who do not comply with this protocol may be subject to disciplinary action.

3. Applicable Standards

- A. American National Standards Institute (ANSI) Standards: A14.1 to A14.5 and A14.7 Safety Codes for Ladders
- B. Occupational Safety and Health Administration (OSHA) Standards
 - (1) OSHA 29 CFR 1910, Subpart D – Walking-Working Surfaces
 - (2) OSHA 1926.1053, Subpart X – Ladders

4. Roles and Responsibilities

- A. Employee Safety and Training Division
 - (1) Maintain this written procedure.
 - (2) Ensure that the overall protocol is evaluated annually for effectiveness or updates.
 - (3) Conduct spot inspections of ladders and their use during job site inspections.
 - (4) Stop employees that are using damaged ladders or using ladders improperly.

- (5) Notify the appropriate manager/supervisor of damaged ladders and any safety concerns regarding ladder use.
 - (6) Complete form (P-63) Ladder Inspection Checklist annually for all portable ladders.
- B. Managers/Supervisors
- (1) Ensure compliance with the protocol, including initiating disciplinary action when appropriate for employees not following the proper procedures outlined in this protocol.
 - (2) Attend any necessary training to ensure they understand and are implementing PennDOT's portable ladder procedures.
 - (3) Coordinate or provide employee training according to the requirements outlined in this protocol.
 - (4) Ensure damaged ladders are removed from service and have been properly tagged.
 - (5) Ensure the Ladder Inspection Checklist (P-63) is being performed when applicable.
- C. Employee
- (1) Comply with all PennDOT safety rules and regulations concerning portable ladder safety.
 - (2) Attend all necessary training or instruction.
 - (3) Perform basic visual ladder inspections before each use.
 - (4) Ensure the appropriate ladder is selected and used properly.
 - (5) If a ladder is damaged or defective, complete a Ladder Inspection Checklist (P-63), tag it out of service and report it to your manager/supervisor immediately.

5. Type and Design

There are many types of portable ladders used throughout PennDOT.

- A. Portable ladders are classified by material of construction, load capacity, function and design. Manufacturer specifications are posted or otherwise attached to the ladder to let the user know of its limitations.
- B. Common types of portable ladders are step, platform, straight and extension ladders.
- C. Only ladders that meet ANSI A14.1 to ANSI A14.5, and ANSI A14.7, Safety Codes for Ladders, shall be used.
 - (1) Type IAA professional use ladders have a load capacity of 375 lbs. and shall be used in PennDOT operations.
 - (2) Type IA professional use ladders have a load capacity of 300 lbs. and shall be used in PennDOT operations.
 - (3) Type I industrial ladders have a load capacity of 250 lbs. and shall be used in PennDOT operations.
 - (4) Type II have a load capacity of 225 lbs. and may only be used in office environments for painting or light duty operations.
 - (5) Type III (household use) ladders shall not be used in any PennDOT operations.
 - (6) Mobile ladder stands/platforms have a rated load capacity of 300 lbs., a structural safety factor of four and shall be used in PennDOT operations.
- D. Safety devices for portable ladder include slip resistant safety shoes, spikes, spurs, ladder levelers, safety support tops/attachments and any other device to increase ladders' stability.
- E. Employees shall take into consideration their body weight and tools that will be utilized to ensure the load capacity of the ladder is capable of withstanding the maximum intended load anticipated.

6. Inspection

- A. Initial inspection for all ladders shall be completed and documented by the organization using the Ladder Inspection Checklist (P-63) when the organization first receives the ladder. After the initial inspection, the Ladder Inspection Checklist (P-63) shall be completed on an annual basis for each ladder or when the ladder is placed out of service due to the ladder being damaged or defective.
- B. Ladders that need repair shall not be used. If any defects are discovered during the employee inspection, the ladder shall be tagged "Out of Service." The ladder shall be taken out of service until properly repaired or replaced.
- C. Ladders exposed to the following situations shall be placed out of service until the ladder has undergone a documented inspection:
 - (1) Involved in a tip over or struck by equipment or a vehicle.
 - (2) Exposed to a fire.
 - (3) Exposed to corrosive substances.
 - (4) Contact with a live or arcing electrical line.

7. Selection

- A. Portable ladders shall be selected based on their size, construction and type for the work being performed.
- B. Portable ladders shall be properly labeled and used according to the manufacturer's ratings (duty rating, highest standing level, maximum working length, etc.).
- C. Metal ladders shall not be used in areas where they may come into contact with energized electrical sources (i.e. panels, transformers, power lines, etc.).
- D. Mobile ladder stands/platforms shall not be used on uneven or sloping surfaces.
- E. Ladders shall be of sufficient height and in the proper position to perform the work. It is unsafe to use a ladder that is too long or too short.
- F. When attempting to gain access to a platform, roof or other elevated area, a straight or extension ladder shall be used.

8. Use

There are inherent hazards associated with ladder use. Portable ladders shall only be used according to the purpose for which they were designed. The following rules shall be observed when placing, climbing and using ladders:

- A. General Use
 - (1) Never use a damaged or defective ladder.
 - (2) Do not load any ladder beyond the maximum intended load or the manufacturer's rated capacity.
 - (3) Consider the weight of the person, clothing, tools and materials when evaluating the load capacity of a ladder.
 - (4) Use fiberglass or wood ladders with nonconductive side rails around electrically energized equipment and lines.
 - (5) Be sure shoes and rungs are not greasy, muddy or slippery before climbing.
 - (6) Do not use ladders during high winds or storms.

B. Ladder Setup and Placement

- (1) Place the ladder's feet on a level solid base. Never place on movable objects such as boxes, blocks, or other unstable bases (like stairways) to obtain additional height.
- (2) Never place a ladder in front of or around doors, unless the door is properly locked and labeled, blocked open or otherwise guarded.
- (3) Ladders positioned at a location where it may slip or tip over due to work activities shall be securely fastened at the bottom and top.
- (4) Ladders shall never be supported by their bottom rung on a plank. Ladders need to be supported with their manufactured feet.
- (5) Do not use ladders in a horizontal position as runways or scaffolds unless the ladder is designed for that use.
- (6) Keep the areas around the top and base of ladders clear.

C. Climbing and Working on Ladders

- (1) Allow only one person at a time on a ladder, unless specifically designed for such use.
- (2) Always face a ladder when ascending or descending.
- (3) Maintain three points of contact when ascending or descending.
- (4) Never attempt to move or adjust a ladder while a user is standing on it.
- (5) If material shall be handled, raise or lower it with a rope either before going down or after climbing to the desired level.
- (6) Carry tools on a tool belt, not in hand.
- (7) Never overreach or stretch too far to the sides. Keep your belt buckle within the side rails when climbing or working.
- (8) Never slide down or jump off a ladder or climb more than one rung at a time.

D. Extension and Straight Ladders

- (1) Place the ladder so that both side rails have secure footing at the base and equal rigid support at the top.
- (2) Never lean a ladder against unsecured backing, such as loose boxes or barrels.
- (3) Setup the ladder using a four to one ratio: for every four feet in height to the top support point, the base shall be moved one foot out from the wall to ensure a safe 75 degree angle.
- (4) Extend the ladder at least three feet above the top of a landing when used to access an elevated work area.
- (5) Never climb higher than the third rung from the top on a straight or extension ladder.
- (6) Ladders shall be tied off, held in place by a spotter or otherwise prevented from accidental movement.
- (7) When extending the ladder, ensure the rung locks are fully engaged before use.
- (8) Never splice or fasten ladders together to provide longer sections, unless specifically designed for such use.

E. Step Ladders

- (1) Make sure the metal spreaders are completely extended and locked in place before use.
- (2) Step ladders shall not be used as straight ladders.
- (3) Never use, stand or sit on the top two steps of a step ladder greater than three feet in height.
- (4) Never straddle or use the back of a step ladder for climbing.

F. Mobile Ladder Stands/Platforms

- (1) Steps/platforms must be at least 16 inches wide.
- (2) Handrails must have a vertical height in the range of 29 ½ to 37 inches, measured vertically (90 degrees) from the front edge of a step/platform.
- (3) Never stand on an object or extension placed on a step/platform in an effort to gain additional height.
- (4) Always place the stand/platform in close proximity to the work. Descend from the stand/platform and relocate it to avoid overreaching.
- (5) Never climb on or off of a step/platform from any other elevated surface unless the stand/platform has been properly secured to prevent movement.
- (6) Make sure the locking mechanism is engaged before climbing.

9. Transporting

- A. Always retract an extension ladder before moving and tie the rope to secure the fly section(s).
- B. Heavy or long ladders shall be carried by two or more persons.
- C. When carrying a ladder alone, take special care when passing through doorways and around corners.
- D. Always keep the front end slightly higher than the back end.
- E. Before turning, make sure that both ends of the ladder will clear all persons and objects in the vicinity.
- F. Never carry a ladder vertically, except for short distances.
- G. Be aware of overhead electrical sources and powerlines.
- H. When transporting by vehicle with ladder racks, ladders shall be properly supported and secured to minimize movement, vibration or potential employee injury. Verify ladder(s) are secured to the vehicle before the vehicle is moved.
- I. Complete a circle of safety and check the path you plan to use before moving the ladder.

10. Storage and Maintenance

- A. Store ladders where they will not be exposed to the weather and where there is good ventilation.
- B. Do not store them near radiators, stoves, steam pipes or in other places with excessive heat or dampness.
- C. Fiberglass ladders shall be protected from direct sunlight or other ultraviolet light sources.
- D. Ladders shall be stored neatly where they will not fall or cause a tripping and/or potential employee injury.
- E. Keep ladder storage space free of obstructions and accessible at all times.
- F. Other materials should not be placed on ladders while in storage.
- G. Storage racks shall have sufficient supports to avoid sagging which can result in warping the ladder.

11. Training

- A. All employees will be trained on the proper use and inspection of ladders upon initial assignment.
- B. The training shall consist of the information contained within this procedure and may be accomplished by reviewing this protocol or the Ladder Safety Training PowerPoint with employees.
- C. Retraining shall be conducted when warranted by an accident or when other evidence identifies an employee's lack of compliance with or understanding of the protocol.

12. Program Review

This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

13. Recordkeeping

Written training records for each employee detailing training received and the date received will be kept on file for the current and two previous fiscal years by the Employee Safety and Training Division.

Completed Ladder Inspection Checklist(s) (P-63) will be kept on file at the county level by Maintenance Management for the duration of the service life of the ladder.

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Topic
1	Pub 445 (10-13) Page 29
2-5	PPIM 12-146 Ladder Safety Policy (Issued 10/23/12)
6-13	Original, based on AIPP requirements for protocols

Protocol 15 – Fall Prevention and Protection

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9	Conventional Fall Protection System Requirements	P15 - 13
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To complete certain job assignments, employees may have to work at heights where there is the hazard of an unprotected fall. This protocol ensures that the risks associated with working at heights are addressed prior to the work being performed and throughout the duration of the project.

1. Policy

- A. When PennDOT employees are exposed to fall hazards covered by this protocol, all efforts will be made to use fall prevention controls that eliminate the hazard before placing employees in personal fall arrest systems.
- B. For operations that will expose employees to unprotected edges six feet or more above a lower level, before beginning the operation and until the operation is completed, appropriate fall prevention methods and procedures shall be established, implemented and monitored by a competent person.
- C. This protocol prescribes the minimum criteria for addressing employee exposures when working at heights. Additional requirements may be designated by managers/supervisors as needed to adequately address the hazards.

2. Scope

This protocol is intended to ensure compliance with Management Directive 530.31, Workplace Safety and Health Program, and applies to all PennDOT employees and contractors engaging in elevated work six feet or more above the next lower level or in equipment that requires fall protection. Some of these applications include but are not limited to bridges, buildings, area above dangerous equipment, trenches and aerial lifts. In general, fall protection requirements applicable to portable ladders and scaffolding are not covered by this protocol. Fall protection equipment not specified by PennDOT's written protocol shall meet all the specifications set forth by the manufacturer.

3. Definitions

- A. **Anchor Point:** A secure point of attachment for lifelines, lanyards or deceleration devices. A non-certified anchor point shall be capable of supporting at least 5,000 pounds (3,600 pounds or two times the intended maximum load if engineered/certified by a qualified person) per person and shall be independent of any anchorage being used to support or suspend platforms.
- B. **Authorized Person:** A person approved or assigned by the agency to perform specific job duties or to be at a specific job site. The authorized person shall also successfully complete any required training as outlined by the employer.
- C. **Body Belt (Safety Belt):** A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline or deceleration device. The use of body belts is not acceptable as part of a personal fall arrest system. However, use of body belts as a positioning or restraint device is permissible.
- D. **Certified Anchorage:** A fall protection or rescue anchorage that a qualified person certifies to be capable of supporting the potential forces that could be encountered in the process of arresting a fall.
- E. **Competent Person:** A person designated by District Executives and Employee Safety and Training Division, who can identify existing and predictable hazards in the surroundings or working conditions which are hazardous or dangerous to employees and who has the authorization to take prompt corrective action to eliminate the existing and predictable hazards.
- F. **Connector:** A device which is used to couple (connect) parts of the personal fall arrest system together.
- G. **Dangerous Equipment:** Equipment (such as pickling or galvanizing tanks, degreasing units, machinery, electrical equipment, and other units) which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.
- H. **Deceleration Device:** Any mechanism, such as a rope grab, rip-stitch lanyard, specially woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest.
- I. **Deceleration Distance:** The additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body harness attachment point at the moment of activation of the deceleration device during a fall and the location of that attachment point after the employee comes to a full stop.
- J. **Free Fall:** The act of falling before a personal fall arrest system begins to engage and apply force to arrest the fall.
- K. **Free Fall Distance:** The vertical displacement of the fall arrest attachment point on the employee's body harness between the onset of the fall and just before the system begins to apply force to arrest the fall. Free fall distance shall not exceed six feet. This distance excludes deceleration distance and lifeline/lanyard elongation distance.
- L. **Full Body Harness:** Webbing/straps which are secured about an employee's body in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system, preferably at the shoulders and/or middle of the back.
- M. **Guardrail System:** A barrier erected to prevent employees or materials from falling to lower levels. This system includes a top rail, midrail, toe boards and intermediate vertical posts able to withstand 200 pounds applied to the top rail in any direction.
- N. **Hole:** A gap or void two inches or more in its least dimension, in a floor, roof or other walking/working surface.
- O. **Infeasible:** As it relates to fall protection, infeasible means that it is impossible to perform the construction work using conventional fall protection systems or that it is technologically impossible to use any one of these systems to provide fall protection.
- P. **Lanyard:** A flexible line of rope strap that has self-locking snap hook connectors at each end for connecting to a body harness, deceleration device and anchor point.
- Q. **Leading Edge:** The edge of a floor, roof, or other walking/working surface, which changes location as additional floor, roof, etc., is placed or constructed. A leading edge is considered an unprotected side or edge when not under active construction.

- R. **Lifeline:** A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline) or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline) and which serves as a means for connecting other components of a personal fall arrest system to the anchorage. Lifelines shall be designed, installed and used under the supervision of a qualified person.
- S. **Non-certified Fall Protection Anchorages:** An unquestionably strong anchorage that a competent person judges to be capable of supporting the predetermined anchorage strength as prescribed by industry standards and ANSI/ASSE Fall Protection Code. Non-certified anchorages are used either for fall arrest, work positioning, travel restraint or rescue.
- T. **One Hundred Percent (100%) Continuous Fall Protection:** At no time when an employee is exposed to a fall hazard are they permitted to be unprotected. For example, an employee tied off will use a harness along with a double legged lanyard. One of the legs of the lanyard shall always be hooked off. The unsafe practice of unhooking one leg of the lanyard without first connecting the other snap hook is prohibited.
- U. **Opening:** A gap or void 30 inches or higher and 18 inches or wider, in a wall or partition, through which employees can fall to a lower level.
- V. **Personal Fall Arrest System (PFAS):** A system used to arrest (catch) an employee in a fall from a working level. It consists of an anchorage location, connectors, a body harness and may include a lanyard, deceleration device, lifeline or any suitable combination of these.
- W. **Positioning Device System:** A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall and work with both hands free while leaning. The positioning device shall always be backed up by either a shock absorbing or retractable lanyard when exposed to a fall of six feet or greater so that at no time is the employee unconnected.
- X. **Qualified Person:** An individual, who by possession of a recognized degree, certificate or professional standing or who by extensive knowledge, training and experience, has successfully demonstrated their ability to solve or resolve problems relating to the subject matter, work or project.
- Y. **Ramp:** An inclined walking/working surface used to access another level.
- Z. **Restraint System:** A system rigged in such a way that prevents the employee from reaching the fall hazard or falling.
- AA. **Rope Grab:** A deceleration device, which travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest the fall of an employee.
- BB. **Runway:** An elevated walking/working surface, such as a catwalk, a foot walk along shafting, or an elevated walkway between buildings.
- CC. **Snap Hook:** A connector comprised of a hook shaped member with a closed keeper which may be opened to permit the hook to receive an object and when released, automatically closes to retain the object. Snap hooks shall be self-closing with a self-locking keeper which remains closed and locked until manually opened for connection or disconnection, thus preventing the opportunity for the snap hook to disengage or “rollout.”
- DD. **Supervisor:** The manager/supervisor directly in charge of the work operations where a fall protection system is required.
- EE. **Toe Board:** A low protective barrier, usually four inches or greater in height, that will prevent the fall of materials and equipment to lower levels.
- FF. **Total Fall Distance:** The maximum vertical change in distance from the bottom of an individual's feet at the onset of a fall, to the position of the feet after the fall is arrested, including free fall distance and deceleration distance.
- GG. **Unprotected Sides and Edges:** Any side or edge of a walking/working surface (e.g., floor, roof, ramp, runway, etc.) where there is no wall or guardrail system at least 39 inches high.
- HH. **Walking/Working Surface:** Any surface (excluding ladders, vehicles or trailers) whether horizontal or vertical, on which an employee walks or works, including but not limited to floors, roofs, ramps, bridges, runways, form work and concrete reinforcing steel.

4. Responsibilities

Each employee is expected to follow the guidelines provided within this protocol. Supervisors of work covered by this protocol and those serving in the role of a competent person are responsible for ensuring compliance with the policy, procedures and guidance related to this protocol.

A. Employee Safety and Training Division

- (1) Establish PennDOT policy and guidance for implementing an effective fall protection protocol.
- (2) Provide technical guidance at the district and county level according to the requirements and procedures outlined in this protocol.
- (3) Assist managers/supervisors and employees in the evaluation of fall hazards and control methods.
- (4) Oversee or ensure all fall protection equipment is annually inspected and documented by a competent person. Also, provide assistance in determining the removal of equipment from service.
- (5) Designate, develop, provide and/or coordinate employee training to affected employees as appropriate and according to their level of involvement in the protocol.
- (6) Serve as an additional competent person when necessary.
- (7) Conduct random inspections of work procedures and fall protection equipment to ensure it is being used and maintained properly.
- (8) Investigate and document all fall related incidents.
- (9) Ensure the overall protocol is evaluated periodically for effectiveness and/or updates.

B. District Executives/Assistant District Executives/Bureau Directors

- (1) Ensure the proper and timely implementation of an effective fall protection protocol in accordance with PennDOT procedures.
- (2) Provide the necessary resources to ensure PennDOT employees working at heights are properly trained and equipped to perform the work in accordance with this protocol.
- (3) Ensure an adequate number of managers/supervisors are designated and trained to serve in the role of a competent person.

C. Managers/Supervisors

- (1) Conduct pre-job planning to ensure the hazards related to working at heights are identified and addressed prior to the beginning of work.
- (2) Assist with the planning and development of rescue procedures prior to operations involving working at heights.
- (3) Ensure the proper equipment is available for working at heights.
- (4) Evaluate and consider alternative work methods to minimize the need for working at heights with personal fall arrest systems.
- (5) Ensure the following when employees will be working at heights using a personal fall arrest system:
 - a. All equipment is in good condition for use.
 - b. Anchor points have been identified by a competent or qualified person and are capable of withstanding the applicable forces.
 - c. There is sufficient clearance from obstructions and the next lower level to prevent impact.
- (6) Coordinate with contractors to ensure the proper procedures for fall protection are being followed.
- (7) Identify and/or serve as the competent person for operations involving fall hazards greater than six feet or requiring fall protection equipment.

D. Competent Person

- (1) Determine and develop the fall protection procedures in accordance with the guidance provided in this protocol.
- (2) Determine the rescue procedures necessary to protect workers in the event of a fall from heights.
- (3) Monitor the work operations where a fall protection system is required and correct any unsafe practices or conditions immediately.
- (4) Conduct training for employees exposed to fall hazards and authorized users of personal fall arrest systems.
- (5) Conduct a documented annual inspection of all fall protection equipment. Also, inspect any load subjected equipment and determine if the equipment should be removed from service.
- (6) Employees that are deemed competent persons and have completed the appropriate level of training may coordinate and/or provide employee training (as appropriate to their level of involvement in this protocol) to employees affected by this protocol.

E. Employees/Authorized Users

- (1) Understand and adhere to the procedures outlined in this Fall Prevention and Protection protocol.
- (2) Use, maintain and store fall protection equipment in accordance with PennDOT procedures.
- (3) Visually inspect fall protection equipment prior to every use.
- (4) Bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees.
- (5) Report any fall related incidents, regardless of the severity of the injury, to the employee manager/supervisor.

5. Program Management**A. Job planning for fall hazards shall be conducted prior to employees being exposed to such hazards.**

- (1) It is of the utmost importance that the methods of control are determined prior to any work being performed.
- (2) The planning should determine the procedures necessary to safely carry out the work task or project, including the fall protection equipment required to address the hazards.
- (3) In all cases, fall prevention methods such as engineering controls that eliminate the fall hazard, shall be evaluated prior to fall protection methods such as a personal fall arrest system.

B. The necessary fall protection procedures shall be determined by a qualified or competent person for designing, installing, monitoring and rescuing workers exposed to fall hazards and to prevent fall accidents from occurring in the workplace.

- (1) Should the fall protection design or controls require any changes or modifications during different phases of work or changes in the methods of construction, a qualified or competent person shall be responsible for determining those updates.
- (2) In most cases, the competent person will be the supervisor of the work operation or other individual(s) designated by the district or county.
- (3) In addition to the competent person, the Employee Safety and Training Division, manager/supervisor or workers involved in the operation should assist in the evaluation of the work location and control methods.

C. Fall Protection Procedures

The following list is intended to provide guidance on the specific items or procedures that shall be addressed or determined when job planning for fall hazards covered by this protocol.

- (1) Designate a competent and/or qualified person(s) to monitor the fall protection related activities for the project.
- (2) Ensure the competent or qualified person in charge of the project is onsite to implement the procedures and make any necessary corrective actions immediately.
- (3) Determine the type of fall prevention or fall protection methods systems that are necessary to address all phases of work. At minimum, the fall protection systems shall address or meet the following criteria:
 - a. The procedures shall provide for 100% continuous fall protection.
 - b. Acceptable anchor points and/or anchorage connectors shall be identified. Anchorages shall be selected or designed by a qualified person (certified anchor) or a competent person (non-certified anchor).
 - c. The free fall, swing fall and fall clearance distances shall be determined to ensure that employees will not hit any objects or a lower level in the event of a fall.
 - d. The methods and equipment shall be identified to minimize potential fall forces as much as possible.
 - e. The total number of personnel using the system shall be identified.
 - f. Instruction for inspecting each component of the system and the frequency of inspection shall be provided to the Employee Safety and Training Division and the competent person(s) designated to assist in inspections.
 - g. Any limitations of the system or equipment shall be determined and communicated to all affected employees.
 - h. Any other relevant information pertaining to the project or additional requirements from the manufacturer of the equipment shall be reviewed with all affected employees.
- (4) Ensure all employees receive the appropriate training according to their level of involvement prior to being exposed to the fall hazards.
- (5) Provide a description of the fall hazards that will be encountered at the worksite and the fall protection control methods to those performing the work, including those employees that are visiting from another worksite.
- (6) Inform employees of the instructions for assembly, use, disassembly, storage and maintenance of fall protection equipment applicable to the project.
- (7) Determine the rescue procedures for the project and communicate those procedures to all affected employees.
- (8) Develop a written Fall Protection Plan describing the specialized fall protection systems necessary to safely carry out the work whenever conventional methods of fall protection are not feasible.

D. Addressing Fall Hazards and Specific Work Applications

As a rule, fall protection is required anytime there is a fall exposure of six feet or greater (or in some cases four feet or greater). Some of the typical exposures that are covered by this protocol include but are not limited to the following:

- (1) Unprotected sides and edges;
- (2) Leading edge work;
- (3) Hoist areas;
- (4) Wall openings and holes;
- (5) Scaffold work;

- (6) Suspended scaffold;
- (7) Scissor lifts/mobile scaffolds;
- (8) Aerial lifts;
- (9) Above dangerous equipment;
- (10) Protection from falling objects;
- (11) Excavations;
- (12) Ramps, runways, and other walkways;
- (13) Working over water; and
- (14) Fixed ladders.

Guidelines for the fall protection methods that are acceptable to address these specific work applications are provided in Section 8 of this protocol.

E. Fall Protection Control Methods

PennDOT realizes that employees shall work at heights to perform certain job tasks.

Identified fall hazards shall be thoroughly evaluated in order to determine the most appropriate control methods. Listed below are the conventional and specialized fall protection systems that shall be considered when addressing fall hazards.

(1) Conventional Fall Protection Systems

The primary methods of conventional fall protection include the following:

- a. Guardrail systems;
- b. Covers;
- c. Safety net systems;
- d. Personal fall arrest systems;
- e. Engineered lifelines;
- f. Positioning systems; and
- g. Restraint systems.

The specific requirements for each of these systems are described in Section 9 of this protocol.

(2) Fall Protection Plans

A fall protection plan is a written document that explains the reasons why conventional fall protection systems are infeasible or why their use would create a greater hazard. The use of a fall protection plan is normally limited to employees engaged in leading edge work, precast concrete erection work or residential construction work. The written plan shall describe the other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection from conventional fall protection systems.

F. Rescue Procedures

- (1) Fallen personnel shall be rescued from their elevated position without delay.
- (2) As a general guideline, rescue procedures should aim to make initial verbal or physical contact with the fallen employee immediately.
- (3) Rescue procedures shall be communicated to all affected employees prior to the beginning of work. All work areas and potential fall hazards shall be evaluated to determine what additional tools, equipment and systems will be needed to reach a fallen employee in the least amount of time. Refer to Section 11 of this protocol for guidance on self-rescue and assisted rescue methods.

G. Equipment Inspection, Storage and Maintenance Procedures

Fall protection equipment shall be inspected on a regular basis to ensure it is maintained properly and fit for service. The requirements pertaining to equipment inspection and storage are listed below. Refer to Section 12 of this protocol for additional guidance on inspection procedures listed by equipment type.

- (1) Inspection Frequency
 - a. The authorized or end user will conduct a thorough visual inspection of their personal fall arrest equipment prior to each use.
 - b. A competent person will use the Fall Protection Equipment Inspection Checklist (Form P- 6110) to conduct and document an annual inspection of personal fall arrest systems and equipment.
 - c. An initial inspection by a qualified person shall be completed after horizontal or vertical lifeline systems are installed.
 - d. Vertical or horizontal lifeline systems shall be inspected by a competent person prior to each day's use and periodically when left installed for an extended period of time.
 - e. Periodic inspections should be performed at least monthly or more frequently as site conditions change or require inspection.
- (2) Hardware shall be thoroughly inspected to ensure the equipment (anchorage, body wear and connectors) is compatible.
- (3) Fall protection equipment shall be immediately removed from service upon evidence of defects, damage or deterioration; once it has been subjected to fall forces; or upon expiration of the manufacturer's specified service limits, whichever comes first.
- (4) Items removed from service shall be tagged or marked as unusable or destroyed.
- (5) Deficiencies which may affect the efficiency or serviceability of the equipment include but are not limited to the following:
 - a. Cuts, tears or abrasion;
 - b. Fraying, unlaying, kinking or knotting;
 - c. Broken or pulled stitches;
 - d. Excessive stretching or elongation;
 - e. Excessive soiling, deterioration or mold;
 - f. Excessive exposure to heat or chemicals;
 - g. Cracks, sharp edges, deformation or corrosion;
 - h. Alteration, absence of parts or improper function of devices;
 - i. Illegible or missing tags and labels;
 - j. Deployed or activated fall arrest indicators; and
 - k. Any other requirements from the manufacturer.
- (6) Mechanical equipment that shows evidence of wear beyond what is deemed acceptable by the manufacturer's recommendations may be recertified by the manufacturer following repair and evaluation for review. Equipment in need of maintenance shall be removed and tagged as out of service.
- (7) Equipment shall be stored in a manner that prevents damage from environmental factors such as heat, light, excessive moisture, oil, chemicals and their vapors or other degrading elements.

6. Contractors and Consultants

- A. Contractors and consultants are required to follow the Fall Protection Standard as set by the US Occupational Safety and Health Administration (OSHA) in 29 CFR § 1926.500.
 - (1) Contractors shall have and follow a written Fall Protection Program and utilize their own fall protection systems and equipment.
 - (2) When projects are managed by PennDOT, PennDOT will be responsible for informing the contractor of the fall hazards and fall protection control methods.
 - (3) If the project is managed by the contractor, the contractor is required to inform PennDOT employees of the fall hazards and applicable fall protection methods.
- B. Maintenance, Design and Construction
 - (1) Contractors or consultants used by PennDOT Maintenance and Design to work at heights shall be informed in advance of the potential fall hazards associated with the area, if known, including the means of protection against those hazards.
 - (2) If construction employees will be working at heights on contracted jobsites, the contractor will be responsible for ensuring the evaluation and control of fall hazards. Construction employees will be provided with information regarding the fall hazards from the contractors and will be informed or trained by the contractor on the fall protection control methods for that project.

7. Training

- A. Fall Protection Authorized User (78SAFE000012)
 - (1) All employees who may be exposed to fall hazards covered by this protocol are required to receive initial authorized user training by a competent person.
 - a. Employees shall receive training as soon after employment as possible and before they are required to work in areas which expose them to fall hazards.
 - b. The protocol shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards.
 - (2) Training of employees by the Competent Person shall include:
 - a. Work application limits.
 - b. Proper anchoring and tie off techniques.
 - c. Determination of total fall clearance distance, free fall distance and deceleration distance in order to prevent striking a lower level.
 - d. Methods and proper use of fall protection systems.
 - e. Inspection of fall protection systems.
 - f. Proper storage and maintenance of fall protection equipment.
 - g. Limitations of the fall protection systems in use.
 - h. Rescue procedures and requirements.
 - i. Any other critical information regarding the use, capacities or limitations provided by the manufacturer.
 - (3) Re-training is required at least every three years to ensure employees are knowledgeable regarding the protocol.
 - (4) Additional training may be required more frequently under the following circumstances:
 - a. Alternative or specialized fall protection systems are utilized.
 - b. Changes in the type of fall protection systems or equipment to be used create the need for additional training.

- c. An employee demonstrates that they did not fully understand the training and there are inadequacies in the employee's knowledge or use of these procedures as demonstrated by an occurrence of noncompliance with the protocol.
 - (5) A record of employees who have received training shall be maintained by the Employee Safety and Training Division. The record shall include the dates of the training and the signature of the person conducting the training.
- B. Fall Protection Competent Person (78SAFE000014)

The competent person shall have the necessary knowledge and experience with the fall protection systems and procedures to be used on the job.

 - (1) To assist the employees filling this role, PennDOT will provide or coordinate initial competent person training.
 - (2) Training will be provided at least annually, and re-training will be required at least once every three years to ensure employees obtain or retain the necessary knowledge to carry out their responsibilities as a competent person.
 - (3) A record of employees who have received competent person training and training dates shall be maintained by the Employee Safety and Training Division.
 - (4) The training provided to the competent person shall ensure they are knowledgeable in the following areas:
 - a. The nature of the fall hazards in the work area.
 - b. The correct procedures for erecting, maintaining, disassembling and inspecting the fall protection systems to be used.
 - c. The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones and other protection to be used.
 - d. The role of each employee in the safety monitoring system when this system is used, if applicable.
 - e. The limitations on the use of mechanical equipment during the performance of roofing work on low sloped roofs, if applicable.
 - f. The correct procedures for handling and storage of equipment and materials and the erection of overhead protection.
 - g. The role of employees in fall protection plans, if applicable.

8. Guidelines for Specific Work Applications

In addition to the guidance below, the manufacturer's instructions regarding any specific fall protection requirements or safe operating procedures (e.g. maximum allowable slope, severe weather/wind, etc.) for scaffolds, lifts and other elevated work platforms shall be followed.

A. Unprotected Sides and Edges

Each employee on a walking/working surface (horizontal and vertical) with an unprotected side or edge which is six feet or more above a lower level shall be protected from falling by guardrail systems, safety net systems or personal fall arrest systems.

B. Leading Edge Work

- (1) Use guardrail systems, safety net systems, restraint systems or personal fall arrest systems such as a horizontal lifeline.
- (2) Exception: When it can be demonstrated that it is infeasible or creates a greater hazard to use these systems, a written fall protection plan shall be developed and implemented.

C. Hoist Area

- (1) Employees exposed to fall hazards in hoist areas shall be protected from falling by guardrail systems or personal fall arrest systems.
- (2) If guardrail systems or portions thereof are removed to facilitate the hoisting operation, and a worker shall lean through the access opening or out over the edge of the access opening, they shall be protected by a personal fall arrest system.

D. Working Near Wall Openings and Holes

- (1) Any time work is performed near a wall or window opening where the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface, fall protection shall be provided by a guardrail system, safety net system or personal fall arrest system.
- (2) Employees shall be protected from falling through holes including skylights more than six feet above lower levels by personal fall arrest systems, covers or guardrail systems erected around such holes.
- (3) Each worker shall be protected from tripping or stepping into or through holes including skylights, by covers.
- (4) Each worker shall be protected from objects falling through holes including skylights, by covers.

E. Scaffold Work

- (1) Use guardrails, full body harness and lifelines.
- (2) During erection and dismantling operations, it is highly recommended to have a fall protection system. During erection and dismantling of scaffolds, an evaluation shall be conducted by the competent person to determine the feasibility and safety of providing fall protection.
- (3) On supported scaffolds over 20 feet high, use stairs instead of ladders to access the scaffold.
- (4) Employees on scaffolds shall be protected from falling 10 feet or more to lower levels by guardrail systems or personal fall arrest systems.

F. Suspended Scaffolds

- (1) In addition to railing, use an independent, vertical lifeline connected to a full body harness for every worker in suspended scaffolds.
- (2) The full body harness is to be connected to the fall arrestor (rope grab) on the vertical lifeline with a lanyard no longer than three feet.
- (3) The rope of the vertical lifeline shall be of the material and diameter compatible with requirements as marked on the fall arrestor.
- (4) The suspended scaffold shall be maintained in accordance with manufacturer's instructions and specifications.

G. Scissor Lifts/Mobile Scaffolds

- (1) When working from elevated work platforms six feet or higher, the elevated work platforms shall be equipped with standard guardrails and toe boards.
- (2) If the worker's feet leave the floor of the elevated work platform or the worker is required to exit the raised lift, 100% continuous fall protection shall be provided.
- (3) The worker shall connect to an anchorage point outside of the scissor lift/mobile scaffold before opening the wing gate and stepping out of the work platform.
- (4) The worker shall not be simultaneously connected to the work platform and to an anchorage point outside of the work platform, in case the scissor lift/mobile scaffold were to move or travel.

H. Aerial Lifting Equipment

- (1) Aerial Lifting Equipment usually has a platform surrounded by guardrails (e.g. JLG) or a basket (e.g. cherry picker) to raise and lower employees.
- (2) Aerial lifting equipment equipped with a boom (articulating and non-articulating) is subject to “hanging up” on protruding objects while being raised and jolting the platform or basket when releasing from the caught projection. This upward jolt can propel (eject) an employee from the platform or basket.
- (3) Employees in an aerial lift with a boom shall be provided with fall protection and it shall be rigged in such a way that they can neither free fall more than six feet nor contact any lower level.
- (4) Fall protection in aerial lifts shall be provided in one of three ways:
 - a. Use of a body belt with a tether anchored to the boom or basket (fall restraint system).
 - b. Use of a full body harness with a tether anchored to the boom or basket (fall restraint system).
 - c. Use of a body harness with a lanyard (personal fall arrest system) or self-retracting lifeline, assuming the fall clearance distance is sufficient to prevent contact with any lower level. It is also assumed that the lift is capable of withstanding the anticipated fall forces and will not tip over or fail.
- (5) The preferred method of fall protection for employees in an aerial lift is to be connected with a restraint system that prevents the employee from falling or being ejected over the railing or from the platform/basket.
- (6) A lanyard without a shock absorber can be used in a restraint system since the employee will not be subjected to a fall or experience forces high enough to deploy the shock absorber.
- (7) Before elevating the work platform when working in a boom supported articulating lift, the operator shall check to see that all occupants’ full body harnesses are on and properly attached.
- (8) Do not tie off to adjacent structures or poles while in the bucket.

I. Above Dangerous Equipment

- (1) Employees less than six feet above dangerous equipment shall be protected from falling into or onto the dangerous equipment by guardrail systems or equipment guards.
- (2) Employees six feet or more above dangerous equipment shall be protected from fall hazards by guardrail systems, personal fall arrest systems or safety net systems.

J. When workers are exposed to overhead falling objects, hard hats shall be worn and one of the following measures shall be implemented:

- (1) Erect toe boards, screens or guardrail systems to prevent objects from falling from higher levels.
- (2) Erect a canopy structure and keep potential fall objects far enough from the edge of the higher level so they would not go over if accidentally displaced.
- (3) Barricade the area to which objects could fall and prohibit workers from entering the area. Keep objects that may fall far enough away from the edge of a higher level so that they would not go over if accidentally displaced.

K. Excavations

- (1) When the excavations are not readily seen because of plant growth or other visual barrier, employees at the edge of an excavation six feet or more in depth shall be protected from falling by guardrail systems, fences or barricades.
- (2) Employees at the edge of a well, pit, shaft and similar excavation six feet or more in depth shall be protected from falling by guardrail systems, fences, barricades or covers.

L. Ramps, Runways and Other Walkways

- (1) Employees on ramps, runways, and other walkways shall be protected from falling four feet or more to lower levels by guardrail systems.
- (2) Ramps and runways that pose a fall hazard of less than four feet are to have posted signs that read "Warning Fall Hazard" and barriers in place to alert employees of the potential fall hazard.

M. Working Over Water

- (1) Employees working over or near water where the danger of drowning exists, shall be provided with a U.S. Coast Guard approved life jacket or buoyant work vest.
 - a. The depth of water is not specified due to the many factors that are relevant in determining whether a danger of drowning exists. These factors include the type of water (pool, river, canal), depth, presence or absence of a current, hazards in the water (rocks, trees), work height above the water surface and the use of fall protection.
 - b. The use of life jackets or vests is not needed for employees working six feet or more above the water when continuous fall protection is used, without exception, and a drowning hazard does not exist determined by the competent person.
- (2) For bridge maintenance work (e.g. bridge construction/demolition, significant deck repairs, etc.) and other related maintenance activities over or near water, consideration shall be given to providing at least one lifesaving skiff and ring buoys.
 - a. The purpose of a skiff and ring buoys is to facilitate the rapid rescue of workers who fall into the water. These devices address the hazard of falls that may occur in the event of a failure or a lapse in use of the fall protection devices.
 - b. The skiff shall be immediately available with a motor, oars and an onsite operator. If the water is shallow enough to allow the rescuer to run in, and the skiff would bottom out, a skiff would not be needed.
 - c. Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. The distance between ring buoys shall not exceed 200 feet. If there are multiple operations or multiple employees working over water, the competent person will need to make a determination on "how many" ring buoys will be needed to cover the body of water for a prompt emergency rescue operation.

N. Fixed Ladders

- (1) Fixed ladders extending 24 feet or more shall have a ladder safety system or personal fall arrest system.
- (2) A ladder safety system consists of a carrier, safety sleeve, lanyard, connectors and a body harness so employees may work or climb the ladder safely.

9. Conventional Fall Protection System Requirements

The following fall protection systems are an acceptable means of controlling fall hazards. Engineering controls or methods that eliminate the hazard and prevent the fall should always be the first selected option whenever possible.

A. Guardrail Systems

Guardrail systems shall consist of a top rail, midrail and toe board. Guardrails shall be constructed from wood, steel, or wire rope. Guardrails will be placed along any open side of a floor, ramp, stairs or other elevated walking/working surface, as applicable or feasible based on the job location.

(1) Design

The following is the height and minimum forces the guardrail system members shall withstand without failure when applied within two inches from the top edge in any outward or downward direction:

- a. Top rails shall be 42 inches high, plus or minus three inches above walking/working level (39-45 inches high) and withstand 200 lbs. of force. When a 200 lb. force is applied at the top edge in a downward direction, it shall not deflect to a height less than 39 inches.
 - b. Midrails, when used, shall be installed at a height midway between the top edge of the guardrail system and the walking/working surface.
 - c. Screens and mesh, when used, shall extend from the top rail to the walking/working level and along the entire opening between top rail supports.
 - d. Intermediate members, when used between posts, shall be not more than 19 inches apart.
 - e. Midrails, screens, mesh or intermediate vertical members shall be capable of withstanding a force of at least 150 lbs. applied at any point along the midrail or other member.
 - f. Posts shall be spaced no more than eight feet apart on centers.
 - g. Toe boards shall be a minimum of 3½ inches high with no more than a ¼ inch clearance above the walking/working surface. They also shall be able to withstand 50 lbs. of force.
- (2) Material of Construction
- a. Wood Construction
 - I. Wood components shall be made of construction grade lumber with a minimum 1,500 lb. ft/square inch fiber (stress grade).
 - II. Top rails and posts shall be a minimum of 2x4 inches nominal.
 - III. Midrails shall be a minimum of 1x6 inches nominal.
 - IV. Toe boards shall be a minimum of 1x4 inches nominal.
 - b. Structural Steel Railings

Posts, top rails and midrails shall be at least 2 inch x 2 inch x 3/8 inch structural steel angles.

 - I. Pipe Railing

Post, top rail and midrail shall be at least 1-1/2 inches nominal diameter (schedule 40 pipe).
 - II. Steel Cable
 - (a.) Top rails and midrails shall be at least ¼ inch steel cable.
 - (b.) There shall not be more than a 3 inch sag in the steel cable at any point between the posts.
 - III. Chains

When using steel chains for top rail and midrail, all components shall have the same criteria for the guardrail system above. There shall not be more than a 3 inch sag in the chain.
- B. Covers
- (1) Install covers on any holes in floors, roofs and other walking/working surfaces that are 2 inches or more in its least dimension.
 - (2) All covers shall support, without failure, at least twice the weight of the employees, equipment and materials that may be imposed on the cover at any one time.
 - (3) Covers shall be secured to prevent accidental displacement by the wind, equipment or employees.
 - (4) Covers shall be marked "Hole" or "Cover" to provide warning of the hazard.

C. Safety Net Systems

- (1) Safety nets shall be installed as close as possible under the surface on which employees are working, but never more than 30 feet below such level. When used on bridges, the potential fall area to the net shall be unobstructed.
- (2) Safety nets shall extend outward from the outermost projection of the work surface according to the chart below.
- (3) Safety nets shall be drop tested and capable of absorbing an impact load.
- (4) Safety nets shall be installed with sufficient clearance under them to prevent contact with the surface or structures below when subjected to an impact force equal to the drop test.
- (5) Safety nets shall be inspected at least once a week for wear, damage and other deterioration. Nets shall also be inspected after any occurrence which could affect the integrity of the system.
- (6) Defective nets and components shall not be used and must be removed from service.
- (7) Any materials or equipment that fall into the net shall be removed as soon as possible and at least before the start of the next work shift.
- (8) The maximum size of each safety net mesh opening shall not be more than 36 square inches or longer than six inches on any side.
- (9) Each safety net, or section of it, shall have a border rope for webbing with a minimum breaking strength of 5,000 lbs. Connections between safety net panels shall be as strong as integral net components and spaced not more than six inches apart.

Vertical distance from working level to horizontal plane of net	Minimum required horizontal distance of outer edge of net from the edge of the working surface
Up to 5 feet	8 feet
More than 5 feet to 10 feet	10 feet
More than 10 feet	13 feet

D. Personal Fall Arrest Systems (PFAS)

A PFAS shall consist of an anchorage location, connectors, body harness and may include a lanyard, deceleration device, lifeline or any suitable combination of these. Body belts are not acceptable as part of a PFAS. The use of PFAS shall meet the following criteria:

- (1) Connectors shall be drop forged, pressed or formed steel or made of equivalent materials. They shall have a corrosion resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system.
- (2) D-rings and snap hooks shall have a minimum tensile strength of 5,000 lbs. and be proof tested to a minimum tensile load of 3,600 lbs. without cracking, breaking or taking permanent deformation.
- (3) Snap hooks shall be sized to be compatible with the member to which they are connected to prevent rollout or unintentional disengagement. Only locking type snap hooks shall be used.
- (4) Unless the snap hook is a locking type and designed for the following connections, snap hooks shall not be engaged:
 - a. Directly to webbing, rope or wire rope.
 - b. To another snap hook.
 - c. To a D-ring to which another snap hook or other connector is attached.

- d. Directly to a horizontal lifeline.
 - e. To any object that is incompatibly shaped or dimensioned in relation to the snap hook such that unintentional disengagement could occur.
- (5) All lanyards shall have self-locking snap hooks and a minimum breaking strength of 5,000 lbs.
 - (6) Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum load of 3,000 lbs.
 - (7) Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet or less, rip stitch lanyards and tearing and deforming lanyards shall be capable of sustaining a minimum load of 5,000 lbs.
 - (8) Ropes and straps (webbing) used in lanyards, self-retracting lifelines and strength components of body harnesses shall be made from synthetic fibers.
 - (9) Anchorages used for the attachment of personal fall arrest equipment shall be:
 - a. Capable of supporting at least 5,000 lbs. per worker.
 - b. Independent of any anchorage being used to support or suspend platforms.
 - c. If not capable of supporting 5,000 lbs., anchorages shall maintain a safety factor of two and be designed, installed and used under the supervision of a qualified person.
 - (10) When stopping a fall, PFAS shall:
 - a. Limit maximum arresting force on a worker to 1,800 lbs. when used with a full body harness.
 - I. Only shock absorbing lanyards or retractable lanyards with deceleration devices will be used in order to minimize impact forces on the body as much as possible.
 - II. The weight of the worker includes any tools and should be minimized as much as possible to limit fall forces.
 - III. If the combined weight of the worker and tools exceeds 310 lbs., PennDOT shall provide the proper protection for such heavier weights to be in compliance with the requirements of this section and the manufacturer's specifications.
 - b. Be rigged in such a way that a worker cannot free fall more than six feet or contact any lower level.
 - I. This is normally accomplished by having the anchor point located at or above the D-ring of the harness.
 - II. In cases where an employee shall be attached to an anchor point between their D-ring level and working surface, shorter lanyards or other types of connecting devices shall be utilized.
 - III. The maximum six foot free fall distance is only permissible when the area below the working surface is free of obstructions or other hazards.
 - c. Bring a worker to a complete stop and limit maximum deceleration distance to 3.5 feet. Have sufficient strength to withstand twice the potential impact energy of a worker free falling a distance of six feet or the free fall distance permitted by the system, whichever is less.
 - (11) In most cases, the attachment point of the body harness shall be located in the center of the wearer's back, near shoulder level.
 - (12) Body harnesses and related components shall be used only for worker protection and not to hoist materials.
 - (13) PFAS shall not be attached to guardrails systems, nor shall they be attached to hoists.

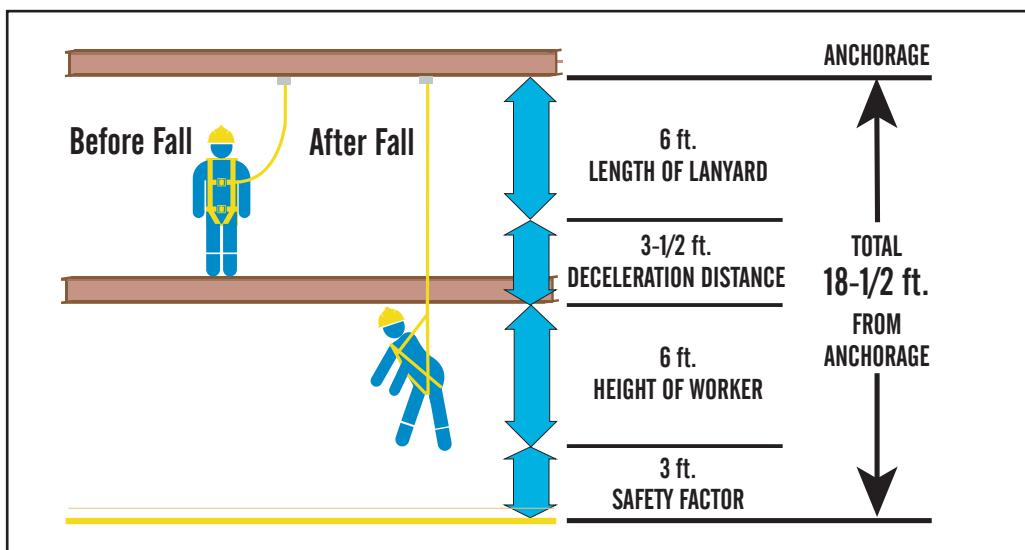
- E. Positioning systems consist of an anchorage, one or two short lanyards and a full body harness attached to a vertical work surface. Their use shall meet the following criteria:
- (1) A full body harness will be used at all times. Body belts will not be permitted for PennDOT use.
 - (2) Positioning systems shall be rigged so that a worker cannot free fall more than 2 feet.
 - (3) Attached to an anchorage capable of supporting 3,000 lbs. or twice the potential impact load of the worker.
- F. Restraint Systems
- (1) Fall restraint is a system which physically limits a worker's exposure to a fall hazard by stopping them before they fall.
 - (2) Fall restraint systems shall meet the same requirements of both the positioning and personal fall arrest systems.
 - (3) This system may be used in areas where other systems like guardrails, covers, nets or other conventional systems cannot be installed or are removed to facilitate work.
 - (4) Their use shall meet the following criteria:
 - a. The system shall consist of a safety harness (full body harness) attached to a securely rigged restraint line.
 - b. The rope, lanyard or cable being used shall be rigged in a manner to physically restrict access to the hazard.
 - c. The anchor point shall be capable of supporting 3,000 lbs. or twice the maximum expected force that is needed to restrain the person from falling.
 - d. Personal fall limiters and self-retracting lanyards are prohibited for use as part of a restraint system or in horizontal applications unless they are permitted for such use by the manufacturer.
- G. Engineered Lifelines
- (1) Horizontal Lifeline System

A horizontal lifeline is a fall arrest system that consists of a flexible rope, wire or synthetic cable that is installed on a horizontal plane between two anchorages. It is used for the attachment of an employee's lanyard or self-retracting lifeline and allows movement horizontally across the lifeline. Horizontal lifelines are used to control dangerous pendulum-like swing falls that can be created by fixed anchor points and retractable units. Horizontal lifelines shall be designed, installed, certified and used under the supervision of a qualified person for fall protection, as part of a complete fall arrest system, which maintains a safety factor of 2. Horizontal lifelines can be either permanent or temporary systems.
 - (2) Vertical Lifeline System

A vertical lifeline consists of a vertically hanging flexible line for connection to an anchor point at one end that serves as a means for connecting other components of a personal fall arrest system to the anchor point. A rope grab is a fall arrester designed to move up or down a lifeline (manually or trailing), to which the harness is attached.

When vertical lifelines are used, each employee shall be attached to a separate lifeline and the lifeline shall be protected from being cut or abraded.
- H. Calculating Total Fall Clearance Distance
- (1) In addition to limiting free fall distance to six feet or less, it is also critical to determine the necessary fall clearance distance to prevent a worker from hitting the ground or next lower level. The calculation for fall clearance distance shall take into account the total distance from the anchor point to the end of a fall.
 - (2) When working over dangerous equipment or other hazards, the free fall may need to be limited to less than six feet, and the obstruction or dangerous equipment should be treated as the next lower level when calculating the total fall clearance.

- (3) To correctly calculate the total fall clearance distance, employees shall consider the following:
- The length of the anchorage connector, if used.
 - The length of the lanyard or self-retracting lanyard.
 - The deceleration distance (max. of 3 ½ feet).
 - The height of the worker.
 - Amount of deflection if using a horizontal lifeline.
 - A safety factor of three feet. The inclusion of a safety factor in the calculation is highly recommended due to several possibilities that can affect fall clearance distance, CC including:
 - Math errors.
 - Miscalculation of the distance to the next lower level.
 - D-ring slide and harness stretch.
 - Improperly fit harness.
 - In the diagram, a worker of average height (six feet tall), utilizing a six foot shock absorbing lanyard and a full body harness, shall attach to an anchor point that is at least 18 ½ feet from the next lower level.



10. Specialized Fall Protection System Requirements

Whenever specialized systems are utilized, a written fall protection plan is required to ensure that the procedures are adequate. Below are the requirements for fall protection plans and the specialized control methods that may be utilized to address certain work tasks or fall hazards.

A. Fall Protection Plans

This option is only available to workers engaged in leading edge work and precast concrete erection and who can demonstrate that it is infeasible or creates a greater hazard to use conventional fall protection systems.

The fall protection plan shall conform to the following:

- Fall protection plans shall be prepared by a qualified person and developed specifically for the site where the work is performed. Any changes to the plan shall also be approved by a qualified person.
- A copy of the plan shall be maintained at the job site.

- (3) The implementation of the plan shall be under the supervision of a competent person.
- (4) The plan shall document the reasons why the use of conventional systems is infeasible or why their use would create a greater hazard.
- (5) The plan shall include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection by conventional methods.
- (6) The plan shall identify each location where conventional methods cannot be used.
- (7) In the event an employee falls or some other related, serious incident occurs (e.g. near miss), an investigation shall occur to determine the circumstances of the incident and if the fall protection plan needs to change (e.g. new practices, procedures or training). Any changes from the investigation shall be implemented immediately to prevent similar types of falls or incidents.

11. Guidance on Rescue Procedures

A site specific rescue procedure for suspended employees shall be determined and communicated to all affected employees prior to the beginning of the elevated work. In the event of a fall, employees shall be promptly rescued or have the ability to rescue themselves. The availability of rescue personnel, ladders or other rescue equipment shall be evaluated. In some situations, equipment which allows employees to rescue themselves may be desirable, such as devices which have descent capability.

Refer to the guidance below for the rescue options and issues that shall be considered when determining a site specific rescue procedure.

A. Self-Rescue

A fallen employee that is suspended in a full body harness and is not incapacitated (e.g. an injury, stroke or heart attack) can usually perform a self-rescue if:

- (1) The fallen employee can reach an adjoining structure and has the strength and mobility to pull themselves up and onto the structure.
- (2) The employee has a self-deploying/manual deploying coiled webbing rescue ladder attached to lanyard anchorage, which after a fall allows them to climb up to the anchorage point, or at least simply stand in the ladder allowing the necessary circulation to the entire body while an assisted rescue is being commenced.
- (3) An automatic or manually controlled descent device can be used as a self-rescue device if there is one attached to a separate anchorage point.
- (4) Additional self-rescue equipment or aids to consider include, but are not limited to block and tackle assemblies and safety straps/relief step straps.
- (5) All personnel who will work from heights utilizing fall protection will be trained in the self-rescue techniques or equipment to be used on site prior to the beginning of work.

B. Assisted Rescue

Assisted rescue can be accomplished through off-site emergency medical services or on-site personnel.

- (1) Coordination with off-site Emergency Medical Services (EMS) can be used in situations where the job site is located in close proximity to a rescue team, such as a fire department. It is possible that all rescues may be handled by the off-site rescue team; however, response time, trained personnel and the availability of the proper rescue equipment are critical issues to consider when selecting this option. When using off-site emergency medical services, consider the following:
 - a. Has a meeting or a mutual agreement been arranged for the EMS so they become familiar with the construction site and the various areas where rescue may have to be performed?

- b. Will EMS arrive in a timely manner (usually between 5 to 15 minutes) in the event of a fall and an employee is suspended in a full body harness?
 - c. What rescue methods will EMS employ?
 - d. Is the EMS capable of handling such an emergency, including the proper equipment and training?
 - e. Has a communication procedure and means of contacting off-site EMS been determined?
- (2) If off-site EMS is not accessible, it is important that on-site personnel are trained and capable to conduct the rescue. Trained on-site personnel should meet the following guidelines:
- a. Rescue personnel shall be familiar with the rescue procedures and equipment to be used on-site.
 - b. Rescue personnel shall be certified in first aid and CPR.
 - c. Rescue personnel shall be physically fit and capable of completing the rescue. They shall also be available for each shift.
- (3) When utilizing on-site or internal personnel, it is possible that access to a fallen employee can be gained by the following equipment:
- a. Double sided ladder;
 - b. Scissor lift;
 - c. Boom lift;
 - d. Basket suspended by a crane; or
 - e. A block and tackle/rope grab system designed for personnel rescue.
- (4) Should employees fall into a vessel, tank or plumbing, the following could be used for rescue:
- a. A rescue winch operated from the surface (this is very difficult if the rescue line is not attached before the fall).
 - b. Wrist grabs can be attached to the fallen employee.
 - c. The fallen employee can be hoisted with a winch or come-along after being placed in a stretcher or stokes basket.
- C. Anchorages used for rescue
- (1) Anchorages selected for rescue systems, including control descent devices, shall be capable of sustaining static loads of at least 3,000 pounds applied in the direction permitted by the rescue system when designed as a rescue system only.
 - (2) Anchorage connections shall be stabilized to prevent unwanted movement or disengagement of the rescue systems from the anchorage. Rescue systems shall be load tested before a live load is placed on the system.
 - (3) Anchorages should be located at a point above the rescuer in order to prevent or reduce the potential for swing falls.
- D. Selective Rescue Equipment and Systems
- Additional rescue equipment includes, but is not limited to, the following:
- (1) Evacuation harness;
 - (2) Rescue cradle;
 - (3) Rescue lanyard;
 - (4) Safety rescue ladder;
 - (5) Seat sling; and
 - (6) Self-retracting lanyard with integral rescue capability.

12. Guidance on Equipment Inspection, Storage and Maintenance

Fall protection equipment and systems shall be inspected on a regular basis and immediately removed from service at any signs of defects, damage or wear. In addition to the guidance below, the equipment shall be inspected, used and maintained in accordance with the manufacturer's instructions.

A. Guardrails

- (1) Guardrails shall be inspected on a regular basis to ensure their structural integrity; weekly inspections by a competent person are recommended.
- (2) If manila or synthetic rope is being used for the guardrails, then inspections shall be more frequent due to the possibility of deterioration or damage.

B. Hole Covers

Hole covers are similar to guardrail systems in that they shall be inspected regularly for structural integrity. A recommended interval is weekly or as needed.

C. Safety Nets

- (1) Safety nets shall be inspected weekly for wear, damage and other deterioration. All defective components shall be replaced immediately.
- (2) Safety nets shall also be inspected after any occurrence which may affect the structural integrity of the net. Examples include the following:
 - a. After-impact tests.
 - b. An employee falls into the net.
 - c. Material falls into the net.
 - d. Any object strikes the net and could have caused damage.

D. Anchorage Systems (Anchorage and Anchorage Connectors)

- (1) Inspect all components of the anchorage system.
- (2) Verify the initial structural integrity of the anchor point. Once verified, weekly inspections are recommended for the following:
 - a. Look for excessive wear or deformity which could weaken the anchor point.
 - b. Look for cracks or sharp edges.
 - c. Look for any evidence of misuse, such as the anchor point being used for rigging or lifting heavy loads.
- (3) Observe any abrasions, wear points, damaged threads or swags in the sling material before use.
- (4) For synthetic slings and anchor straps, inspect all sewing and loops for wear, chemical damage, burn damage and/or ultraviolet deterioration.
- (5) Refer to the attached tags on the anchorage connector to determine when the sling or device shall be retired.
- (6) Inspect cable slings for excessive damage to the steel fibers.
- (7) Inspect anchorage connectors for integrity and attachment to solid surfaces.

E. Snap Hooks and Carabiners

- (1) Inspect on regular basis and before each use.
- (2) Inspect snap hooks and carabiners for any hook, lock or eye distortion.
- (3) Verify there are no cracks, pitted surfaces or corrosion.
- (4) The keeper latch shall not be bent, distorted or obstructed.
- (5) Verify that the keeper latch seats into the nose without binding.
- (6) Verify that the keeper spring securely closes the keeper latch.

- (7) Test the locking mechanism to verify that the keeper latch locks properly.
- (8) Verify that the points where the lanyard attaches to the snap hooks are free of defects.
- (9) Retire snap hooks, carabiners and all integral components if any discoloration, deformation, cracks or abrasions are detected.
- (10) Retire snap hooks and carabiners immediately if they have sustained a fall, the spring brake or gate is bent, or the gatekeeper no longer engages the slot cleanly.
- (11) Damaged snap hooks and carabiners shall be tagged and removed from service and the inventory list.
- (12) Dirty snap hooks and carabiners shall be cleaned with kerosene, WD-40, or similar solvents, and shall be immersed in boiling water for 30 seconds to remove the cleaning agent. Dry with a soft cloth to ensure that the gate and gatekeeper operate properly.
- (13) Ensure that only double-locking type gates are used.

F. Lanyards and Energy Absorbers

- (1) Inspect lanyards put under a slight tension.
- (2) Check all components for abrasions, cuts, discoloration, cracks, burns, knots, kinks, broken stitching and excessive wear.
- (3) Visually inspect the energy absorber for any signs of damage, paying close attention to where the energy absorber attaches to the lanyard.
- (4) Verify that there is no visible "Warning Flag or Indicator" which notifies the user that the lanyard has been exposed to a fall.
- (5) Check for missing markings and labels.
- (6) Lanyards and energy absorbers shall have a permanently attached label indicating the manufacturer's name, serial number/lot number, manufacture date, maximum elongation, maximum arresting force, maximum free fall and capacity. The lanyards and energy absorbers shall also have permanently attached labels that indicate they meet OSHA & ANSI Z359.1 requirements. Lanyards bearing the markings of ANSI A10.14 (only) are not acceptable, and they shall be taken out of service.
- (7) Wash lanyards and energy absorbers on a regular basis to remove dirt and grit which can abrade the fibers.
- (8) Maximum usage of a lanyard shall not be more than five years, unless the competent person for fall protection carefully inspects it, reviews its history of use and storage, and recommends its continued use. This assumes the manufacturer's maintenance guidelines have been followed and the lanyard has been stored in a climate controlled location (e.g. in a plastic bag, not exposed to fumes and in a cool location out of direct sunlight). Retire the lanyard under the following circumstances:
 - a. After a fall.
 - b. When the shock absorber shows any signs of being slightly impacted or deployed.
 - c. If the lanyard has been used for any purpose other than fall protection.
 - d. If the equipment shows excessive wear, chemical damage, burn damage and/or ultraviolet deterioration.

G. Fall Arrester (Rope Grab)

- (1) Check for signs of wear, corrosion, cracks, deformities and other anomalies.
- (2) Check for proper function.
- (3) If any sign of wear or malfunction, remove the device from service immediately.

H. Self-Retracting Lanyard (SRL)

- (1) Inspect before each use for any physical damage.
- (2) Inspect by a competent person once every six months and by the manufacturer annually.
- (3) SRLs shall be returned to the manufacturer for servicing and re-certification once a year. Some manufacturers do not require annual certification. Consult manufacturer's instructions.
- (4) If the SRL housing becomes yellow, gathers condensation or the indicator has been engaged, remove from service immediately and return it to the manufacturer for repair and re-certification.
- (5) SRLs shall have permanently attached labels that indicate they meet ANSI Z359.1 and OSHA standards and requirements.
 - a. The ANSI Z359.1 2021 updated standard introduced revisions and new requirements for device types and classifications among other requirements. Equipment that is in compliance with the ANSI 2014 standard is still approved for use if it is not damaged or in disrepair. As the older equipment is taken out of service, SRLs that meet the new ANSI 2021 standard must be put in place.
- (6) Make sure all back nuts or rivets are tight.
- (7) Make sure the entire length of the nylon strap is free of any cuts, burns, abrasions, kinks, knots, broken stitches and excessive wear.
- (8) Test the unit by pulling sharply on the lanyard at various lengths to verify that the locking mechanism is operating correctly, and the line retracts freely.

I. Body Wear (Full Body Harness)

- (1) Inspect thoroughly and verify there are no torn, frayed, broken fibers, pulled stitches, frayed edges or hard brittle spots anywhere on the harness.
- (2) Closely examine all the nylon webbing to ensure there are no burn marks from welding or heat sources which could weaken the material.
- (3) Examine the D-ring for excessive wear, deterioration or cracks.
- (4) Verify that buckles and all hardware are not deformed, cracked and will operate correctly.
- (5) Check to see that all grommets (if present) are secure and not deformed from abuse or a fall. There shall never be any additional punched holes.
- (6) Check tongue/straps for excessive wear from repeated buckling.
- (7) All rivets shall be tight and not deformed.
- (8) Inspect for missing markings and labels.
- (9) Ensure harnesses are not painted, marked or modified.
- (10) Examine the harness for discoloration, abrasions and ultraviolet deterioration.
- (11) Store harnesses in a cool, dry and safe environment, ideally in a locked storage area or bag away from direct light.
- (12) Wash the harness in a mild soap and rinse multiple times to remove any soap residue and hang to dry in a cool, dry environment away from direct sunlight.
- (13) Retire harnesses from service after five years from the date put into service unless the competent person for fall protection carefully inspects it, reviews its history of use and storage, and recommends its continued use.
 - a. The competent person is only allowed to recommend continued use if the equipment is not frequently used and is properly stored between uses.
 - b. The competent person may allow continual use of fall equipment. However, the life of service shall only be extended up to 10 years from the in-service date.

- (14) The in-service date should be marked on all fall protection equipment on the date it was put in place. If the in-service date is unknown, it is recommended to use the manufacturer date.
- (15) The body support harness shall have a permanently attached label indicating the manufacturer's name, serial/lot number, manufacture date, service date, capacity and that it meets OSHA and ANSI Z359.1 requirements.

J. Horizontal Lifeline

- (1) Inspect the system including anchorages, anchorage connectors, cable and other hardware for defects or loose components similar to the inspection of other fall arrest system components.
- (2) See manufacturer's manual for additional guidance.

K. Ropes (Synthetic Fibers)

- (1) Inspect rope periodically for broken fibers, severely worn areas, or change in the consistency of the core. Inspect under slight tension and check for soft areas, bulges or excessive stiffness.
- (2) Avoid exposing rope to hazardous chemicals, moisture, acids or oils.
- (3) Do not use the rope after it is impacted or damaged.
- (4) Wash the rope on a regular basis with lukewarm water and mild detergent to remove dirt or grit. Rinse the rope several times to remove soap residue and hang it in a dry, cool and dark area.
- (5) Store rope in a strong, weatherproof bag. Rope shall always be dry before placing in storage.
- (6) Rope shall have a permanently attached label indicating the manufacturer's name, serial/lot number, manufacture date, capacity and that it meets OSHA and ANSI Z359.1 requirements.
- (7) Retire rope after five years of service unless the competent person for fall protection carefully inspects it, reviews its history of use and storage, and recommends its continued use. If it is damaged, impacted or exposed to chemicals, remove from service immediately.
- (8) If possible, avoid the use of Kern mantle-type ropes.

13. Program Review

This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

14. Recordkeeping

The following records will be maintained:

- A. Training records shall be retained in the employee's training record for the duration of employment.
- B. Copies of the annual inspection forms for fall protection equipment shall be forwarded to the Employee Safety and Training Division for retention.
- C. Documented fall protection plans, when required, will be maintained locally at the county level with a copy forwarded to the Employee Safety and Training Division.
- D. This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Topic
1	PPIM 13-162, Fall Protection Policy (Issued 10/16/13)
2	Pub 445 (10-13), Page 28
3	PPIM 13-162, Fall Protection Policy (Issued 10/16/13)
4-6	PPIM 13-162, Attachment 1, Fall Protection System Requirements
7	PPIM 13-162, Fall Protection Policy (Issued 10/16/13) PPIM 13-162, Fall Protection Policy (Issue and Effective Date: 10/16/13)
8-12	PPIM 13-162, Attachment 2, Fall Protection Competent Person Course Criteria, Section 12 updated (10/28/2021)
13-14	PPIM 13-162, Fall Protection Policy (Issued 10/16/13) Original based on AIPP requirements for protocols

Protocol 16 – Garage Safety

Section	Topic	Page
1	Policy	P16 - 1
2	Communications	P16 - 2
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4	Recordkeeping	P16 - 2

Numerous and a variety of operations occur in PennDOT garages. These operations involve a lot of hazards such as hot liquids, chemicals, flying debris, and moving parts. This protocol describes policies and work practices that incorporate safety into garage operations to make these workplaces safer, and to work toward the elimination of accidents and injuries.

1. Policy

- A. Individual work areas within the garages and equipment repair shops location must be designated and delineated.
 - (1) Mechanics' work areas shall be defined by outlining each area on the floor with a four inch wide red line.
 - (2) Only mechanics, supervisors, managers or employees assigned to assist the mechanics are permitted within the work areas. Employees that are assigned to other areas shall not, at any time, be in these work areas unless specifically assisting a mechanic by request or assignment.
 - (3) The garage weld shop or welding area is intended for the welder, their assistant, supervisors and managers. No employees will be permitted in the weld shop/area unless specifically granted permission by the Equipment Manager or Mechanic Supervisor.
- B. Garages need to allow safe passage for employees to access offices, restrooms, and exits. To reduce exposures to hazards for employees that are not directly a part of the ongoing work operations in the garage, all safe passage areas must be delineated.
 - (1) Safe passage areas must be a minimum of three feet wide and must be delineated, throughout the garage area, on the floor with a four inch wide yellow line.
 - (2) Employees traversing the garage area are required to remain within the yellow lines of the safe passage area. Once outside the safe passage area, employees are considered within the garage work area, and proper eye and safety footwear is required to be worn by all employees in this location.
 - (3) Signs shall be posted at each doorway or entrance to the garage indicating that proper eye protection is required outside the safe passage area in the garage.
 - (4) A supply of proper eye protection must be available at each entrance to the garage area.
- C. Garage employees must be provided a copy of the Employee Handbook for Garage Safety.
- D. All motor vehicles in the shop for repairs or preventative maintenance that cannot be operated must have an Out-of-Service tag attached to the steering wheel to visibly show any operator that the vehicle is not usable until necessary repairs have been made. A deadlined magnetic strip or window decal may also be used, but not in lieu of the tag. Deadlined magnetic signs or window decals may be purchased through a qualified vendor. Any truck that is not tagged or labeled as described in this paragraph is presumed to be operable in its present condition without any further mechanical work necessary to make the unit roadworthy and safe for operation. The use of this tag does not relieve an operator of the obligation to complete the proper M-614 as required by department policy.

2. Communications

The Safe and Accident Free Environment Taskforce (SAFE-T) developed the Employee Handbook for Garage Safety to inform employees of the occupational hazards related to work performed in our garages and to provide guidance regarding safe practices. In April 2014, it was made available to supervisors and managers to review this publication with their employees and to reference it as it pertains to daily operations. This is not an instruction or policy manual. Work associated with mechanical repair, welding, etc. is to be completed by certified or trained personnel. The safety practices it contains have been prepared to protect garage employees in their daily work. Garage employees are to follow these rules carefully and review them often, as they pertain to their assigned duties.

3. Program Review

This protocol will be reviewed for any changes and updates of the content to make sure it is current and relevant. Details of the annual review will be documented under Recordkeeping.

4. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Topic
Intro-1	PPIM 14-166 Garage Safety Areas (Issued 3/7/14)
2	Employee Handbook for Garage Safety PPIM 13-157 Out-of-Service Tag Process
3-4	Original based on AIPP structure for protocols

Protocol 17 – Hand and Power Tools

Section	Topic	Page
1	Communications	P17 - 1
2	Out-of-Service Tag Process	P17 - 1
3	Program Review	P17 - 2
4	Recordkeeping	P17 - 2

1. Communications

A subcommittee of the Safe and Accident Free Environment Taskforce (SAFE-T) created a revised version of the OSHA 3080 booklet and entitled it Hand and Power Tool Safety. This booklet was distributed on December 28, 2012 to inform employees of occupational hazards related to the use of hand and power tools, and to provide guidance regarding safe practices. Included in that booklet is a safety assessment for power tools that an employee can use to check for hazards before using the tool. Supervisors and managers of employees that use hand and power tools are encouraged to review the booklet with their employees upon receipt, and as needed. Topics include: hand tools, power tool precautions, guards, safety switches, electric tools, powered abrasive wheel tools, pneumatic tools, explosive actuated tools, explosive actuated fasteners, hydraulic power tools, and jacks.

2. Out-of-Service Tag Process

This policy applies to all PennDOT hand tools and power tools. The objective is to reduce the potential for injury or property damage resulting from the use of tools in need of repair.

- A. All PennDOT hand and power tools in need of repair must be tagged to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Tags must be removed only by the garage personnel responsible for ensuring that the item has been fixed and is safe to operate.
- B. Responsibilities
 - (1) Employees must report any PennDOT hand and power tools in need of repair or servicing due to a mechanical or electrical problem, damage or defect, to their supervisor.
 - (2) Supervisors must ensure that such hand and power tools are taken out of service by attaching an Out-of-Service tag to it.
 - (3) Equipment Managers
 - a. Ensure that the tags are being utilized properly.
 - b. Track the arrival of tagged items, their repair, and their return to service.
 - (4) Assistant County Maintenance Managers are responsible to see that the tags are utilized properly in the field to correctly identify deficiencies in tools that are or should be taken out of service.
 - (5) County Maintenance Managers are responsible to ensure that all employees are aware of this policy and are trained in its use.
- C. Procedures
 - (1) The Out-of-Service tag must be attached to the item where it is highly visible, such as on a handle or next to an on/off switch.
 - (2) The Out-of-Service tag must clearly indicate that the item it is attached to must not be used or operated.
 - (3) The person attaching the tag should legibly print on the tag their name, the date, and the reason the item is being taken out of operation.

- (4) Supervisors should arrange for transportation of the tagged items to the Equipment Manager to be repaired or taken out of inventory.
 - (5) The Equipment Manager will assess each tool and legibly print on the tag the equipment identification and the foreman, area, or location to which it is assigned.
 - (6) After servicing and/or maintenance are completed and the item is ready for normal operations, garage personnel must remove the Out-of-Service tag.
- D. Please understand that the use of this tag DOES NOT relieve an operator of his or her obligation to complete the proper M-614 as required by PennDOT policy.

3. Program Review

This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

4. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Topic
1	Hand and Power Tool Safety booklet and email used to distribute it on 12/28/12
2	PPIM 13-157 Out-of-Service Tag Process (Issued 1/11/13)
3-4	Original, based on AIPP requirements for protocols

Protocol 18 – Office Ergonomics

Section	Topic	Page
1	Definition	P18 - 1
2	Standard Office Workstation Configuration	P18 - 1
3	Ergonomic Assessment Procedures	P18 - 3
4	Standing Office Workstations	P18 - 4
5	Training	P18 - 5
6	Program Review	P18 - 5
7	Recordkeeping	P18 - 5

Working in an office or teleworking comes with its share of benefits. Employees may experience muscle fatigue, strain, and pain after sitting in front of a computer for hours. Arranging your workstation properly aids in comfort and increases efficiency. This protocol describes the procedures for addressing concerns employees may have regarding any physical discomfort they may experience that they believe may be attributable to the configuration of their workstation.

1. Definition

Office ergonomics, in basic terms, is designing the work area around the employee. Occasionally, adjustments to the position of chairs, desks, monitors, and keyboards can be beneficial to accommodate employees' unique features to allow them to work more comfortably and productively.

2. Standard Office Workstation Configuration

The standard office workstation configuration involves the use of a chair in a position that allows the feet to rest flat on the floor.

A. An office chair should:

- (1) Adjust to allow the user to maintain a neutral posture.
- (2) Have a backrest which supports the natural curvature of the back and provides lumbar (lower back) support. A small pillow or rolled towel can be used to support and add comfort to the lower back.

B. Good seated posture should:

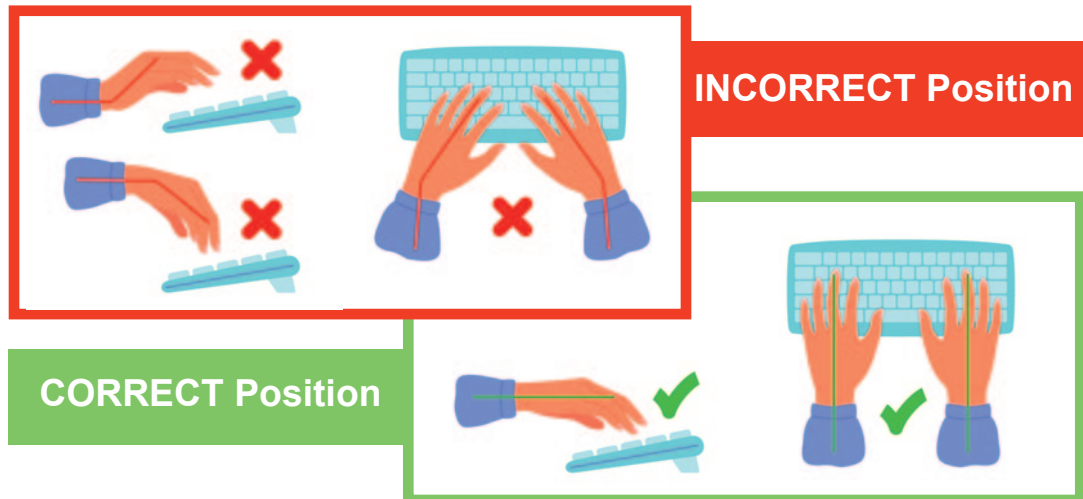
- (1) Have feet flat on the floor with legs parallel. A footrest, which can be a box or ream of paper, can help support this posture if you can't reach the ground.
- (2) Allow enough room between the bottom of the desk and your legs. There should be no equipment below the desk which hinders adequate leg room. If the height of your desk needs to be adjusted, contact your supervisor so that arrangements can be made to make the adjustment.
- (3) Keep the back in a neutral position without slouching. Use the backrest to provide support when possible.
- (4) Have elbows resting comfortably at the side, roughly level with the keyboard. Armrests can be used if it supports this posture.

C. A monitor should:

- (1) Be located directly in front of you, roughly about an arm's length away.
- (2) Be at eye level or slightly below to avoid awkward neck bends when viewing. Users with bifocal or trifocal lenses may require a lower position to prevent constant neck bending.

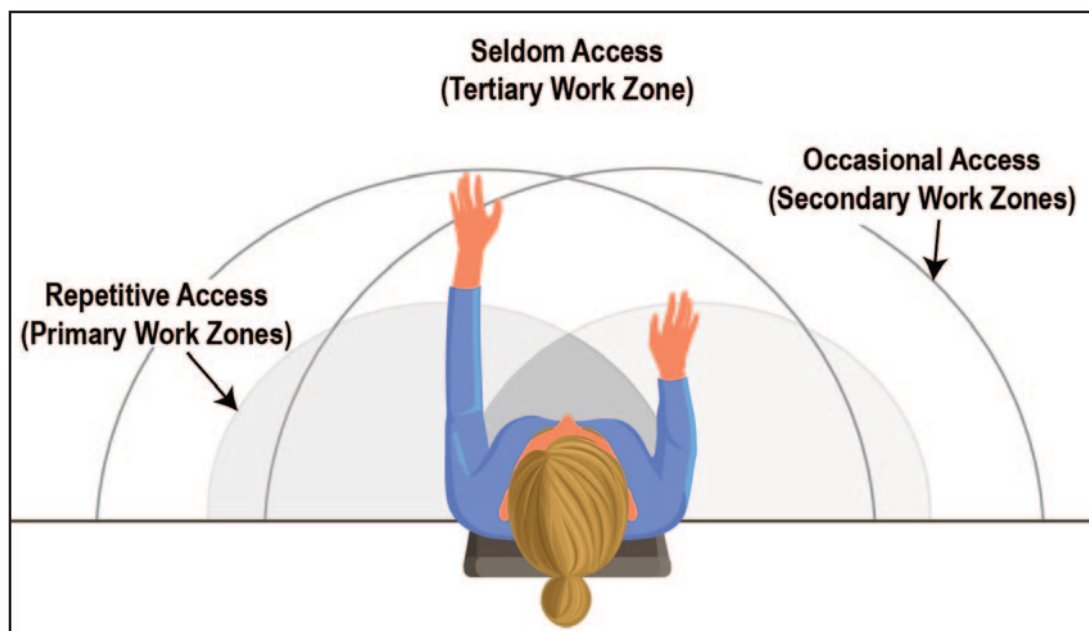
D. A keyboard should:

- (1) Be located at a height to allow the shoulders to be relaxed.
- (2) Be at the same level and directly next to the mouse.
- (3) Support the wrists and hands natural position and avoid awkward bends up/down and sideways. Wrists should not rest on hard surfaces or sharp edges.
- (4) Avoid the following positions:

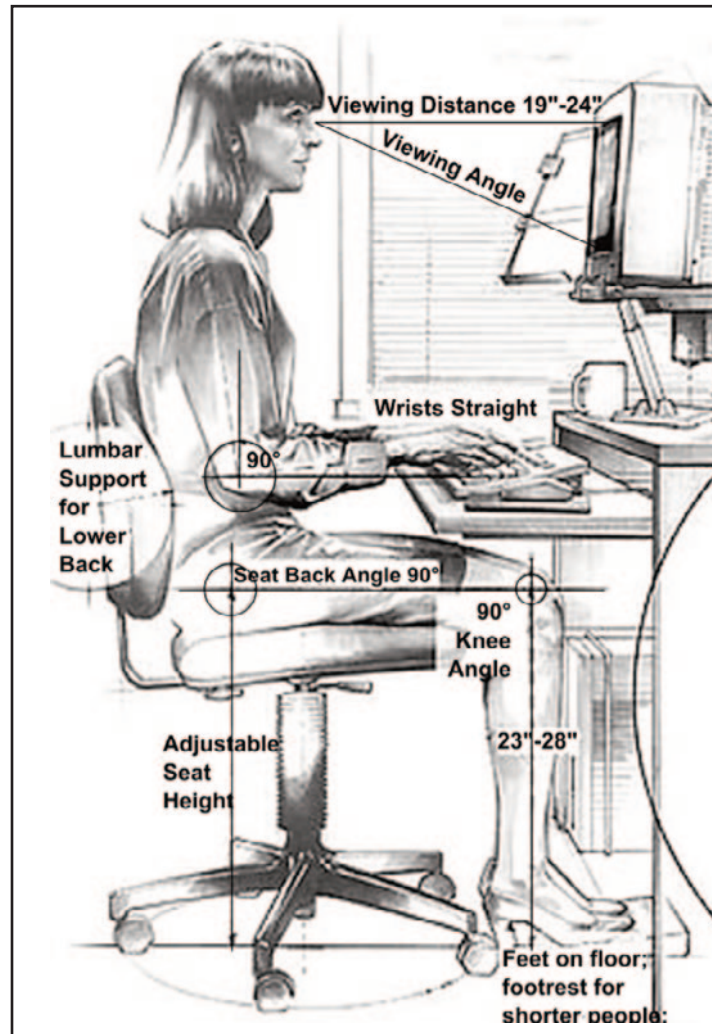


E. Ergonomic work practices include the following.

- (1) Avoid reaching by placing commonly used items in easily accessible areas.
- (2) If needed, place a document holder in line with the keyboard and monitor to maintain a neutral neck position.
- (3) If the phone is used all day, determine if a headset is available to avoid cradling the phone between the head and shoulder.
- (4) Reduce glare by positioning your computer so windows are not directly in front or behind the screen or use blinds to block the light.
- (5) Be mobile and rotate work tasks between computer tasks to other tasks. If possible, alternate between sitting, standing and walking.



- F. Here is an illustration of the proper positioning considerations for the monitor, keyboard, chair, and floor in relation to the employee's body.



3. Ergonomic Assessment Procedures

- A. Employees and supervisors may request an ergonomic assessment of a work station for the following:
- (1) Safety concerns about workstation setup
 - (2) Employee concerns with physical discomfort
 - (3) Existing or potential workers' compensation claims
 - (4) American's with Disabilities Act (ADA) accommodation requests
 - (5) New or revised processes, procedures or tasks
 - (6) Relocations to new workstations.
- B. Requests for an ergonomic assessment must be directed to the immediate supervisor and either the District Safety Coordinators (DSC) or the Employee Safety and Training Division.
- C. Employees that request an ergonomic assessment should be prepared to assist by:
- (1) Completing the Office Ergonomics Concerns form upon request
 - (2) Explaining and performing work tasks during the ergonomic assessment.
 - (3) Following the recommendations resulting from the ergonomic assessment for at least two weeks to determine if there is any improvement.

- D. Supervisors of employees that request an ergonomic assessment should be prepared to assist by:
 - (1) Answering any questions posed by the (DSC), Employee Safety and Training Division, and the consultant, while they are reviewing the work tasks of the employee.
 - (2) Providing support to rearrange work station based on recommendations resulting from the ergonomic assessment.
 - (3) Reminding the employee about ergonomic recommendations made to correct poor postures or work behaviors.
- E. Upon receipt of a request for an ergonomic assessment, the DSC or Employee Safety and Training Division must follow the steps identified below.
 - (1) Contact the employee to schedule a visit and request that the employee complete an Office Ergonomics Concerns. If the employee is not located near the coordinator, a safety committee member or a supervisor may assist with the visit or take pictures to provide to the coordinator.
 - (2) Receive and review the completed Office Ergonomics Concerns.
 - (3) Visit the employee, observe the employee working, and complete the Ergonomic Assessment form, which is also found on the Safety pages of the www.hrm.state.pa.us website. Talk with the supervisor about the job duties as well.
 - (4) Provide feedback and recommendations for improvement to the employee and supervisor at the end of the visit. Also, provide the pertinent ergonomics improvement recommendations to the employee.
 - (5) Check back with the employee in two weeks to determine if improvements were noticed based on the recommendations made during the assessment.
 - (6) If problems persist and no issues were discovered during the review, the Employee Safety and Training Division will need all the information gathered from the assessment to request the assistance of a safety consultant.
 - (7) If the initial request involved a workers' compensation coordinator or disability services coordinator, keep them apprised of the recommendations and any modifications that were made, and the status of the need for a safety consultant to perform further assessments.
 - (8) Share the safety consultant's report with the employee and supervisor, or management, to determine how the safety consultant's recommendations will be implemented.
- F. Upon receipt of a request from the Employee Safety and Training Division to perform an ergonomic assessment, the safety consultant will assist by:
 - (1) Reviewing the Office Ergonomics Concerns and Ergonomic Assessment forms completed as part of the initial review of the work station.
 - (2) Scheduling time to meet with the employee and supervisor to perform the review.
 - (3) Providing a complete report with pictures to the DSC.
- G. Questions about these procedures should be directed to the Employee Safety and Training Division.

4. Standing Office Workstations

Workstations have been modified using the existing furniture or, if available, parts from the manufacturer to create a standing workstation or partial standing workstation.

- A. Office employees may direct requests for a standing workstation to their immediate supervisor.
- B. Supervisors may direct these requests to the Bureau of Office Services at 717-783-8869.
- C. Requests are reviewed on a case by case basis.

5. Training

- A. Web-based training is available to all office employees via Employee Self Service (ESS). The course title is Office Ergonomics for Employees (81ERGOEMP).
- B. Web-based training is available to all Employee Safety and Training Division staff and DSC via ESS entitled Office Ergonomics Assessment Process (81ERGOSUPE).
- C. Web-based training is available to DSCs via ESS entitled Ergonomics (general awareness)- DSC only (78SAFE000032).
- D. Participation for the above courses is tracked in LSO.

6. Program Review

This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

7. Recordkeeping

This protocol contains all new information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Content
Intro-2	Original, based on the Office Ergonomics Training Handout
3	Original, based on the Guide for Requests for Office Ergonomic Evaluations from the Governor’s Office of Administration and current practices
4	Original, based on the response to Idealink Submission #4398 on 6/28/16
5	Original, based on current practices
6-7	Original, based on AIPP requirements for protocols

Protocol 19 – Excavation and Trenching

Section	Topic	Page
1	Policy	P19 - 1
2	Scope	P19 - 1
3	Applicable Standards	P19 - 1
4	Definitions	P19 - 1
5	Roles and Responsibilities	P19 - 3
6	Procedures	P19 - 5
7	Hazardous Atmosphere	P19 - 9
8	Atmospheric Monitoring	P19 - 10
9	Soil Classification	P19 - 10
10	Protective Systems	P19 - 12
11	Inspections	P19 - 14
12	Training	P19 - 15
13	Program Review	P19 - 15
14	Recordkeeping	P19 - 16

1. Policy

It is the policy of PennDOT to provide its employees with a safe and healthy work environment. This protocol sets forth the practices required for excavations and trenches that will be entered by PennDOT employees.

2. Scope

This protocol affects all PennDOT employees who work in or around excavations. Employees are expected to comply with all elements of the PennDOT Excavation and Trenching Protocol. Employees who do not comply with this protocol may be subject to disciplinary action up to and including termination.

3. Applicable Standards

- A. OSHA 1926, Subpart P – Excavations
- B. Pub 222, Geotechnical Investigation Manual
- C. Pub 238, Bridge Safety Inspection Manual
- D. Pub 15M, Design Manual

4. Definitions

- A. Aluminum Hydraulic Shoring: Pre-engineered system comprised of aluminum hydraulic cylinders used in conjunction with vertical rails. Such systems are designed specifically to support the sidewalls of an excavation and prevent a cave-in.
- B. Benching: A method of protecting employees from cave-ins by excavating the sides of an excavation to form a series of horizontal levels or steps, usually with vertical or near surfaces between levels. Type C soil shall not be benched.

- C. **Cave-In:** The separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury or otherwise injure and immobilize a person.
- D. **Cemented Soil:** A soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that hand-size portions cannot be crushed into powder or individual soil particles by finger pressure.
- E. **Cohesive Soil:** Clay (fine grained soil), or soil with a high clay content, which is cohesive in strength. Cohesive soil does not crumble, can be excavated with vertical side slopes and is plastic when moist. Cohesive soil is hard to break up when dry and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay and organic clay.
- F. **Competent Person:** One who is capable to identify existing and predictable hazards in the surroundings or working conditions that may affect employees and the general public, and who has the authority to take prompt corrective measures to eliminate the existing and predictable hazards.
- G. **Cross Braces:** A horizontal member of shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.
- H. **Disturbed Soil:** Soil that has been previously excavated, regardless of depth.
- I. **Dry Soil:** Soil that does not exhibit visible signs of moisture content.
- J. **Excavation:** Any man-made cut, cavity, trench or depression in an earth surface, formed by earth removal.
- K. **Faces (sides):** The vertical or inclined earth surfaces formed as a result of excavation work.
- L. **Fissured:** A soil material that has a tendency to break along definite planes of fracture with little resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.
- M. **Granular Soil:** Gravel, sand or silt (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.
- N. **Hazardous Atmosphere:** An atmosphere of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient or rich, toxic or otherwise harmful and may cause death or injury.
- O. **Layered System:** Two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered systems.
- P. **Moist Soil:** A condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling.
- Q. **Plastic:** A property of a soil which allows the soil to be deformed or molded without cracking or appreciable volume change.
- R. **Registered Professional Engineer (RPE) - also referred to as Professional Engineer (PE):** A person who is registered as a professional engineer by the State Registration Board of Professional Engineers.
- S. **Saturated Soil:** A soil in which the voids are filled with water.
- T. **Shield (shield system):** A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees with the structure. Shields can be a permanent structure or can be designed to be portable and moved along as work progresses (also known as trench boxes or trench shields).
- U. **Shoring (shoring system):** A structure such as metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.
- V. **Sloping (sloping system):** A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline varies with differences in such factors as the soil type, environmental exposure conditions and the application of surcharge loads.

- W. Soil Classification: Categorizing the earth and rock deposits based on at least one visual and one manual test conducted by a competent person using recognized methods of classification and testing.
- X. Spoil Pile: A pile of refuse, created by excavation of earth materials or by removing excess surface materials.
- Y. Stable Rock: Natural solid material that can be excavated with vertical sides and will remain intact while exposed.
- Z. Surcharge Loads: Any extra load (vehicle, spoils, equipment, etc.) which creates extra weight/downward force on the face of the excavation, which causes the excavation to be less stable.
- AA. Tabulated Data: Tables and charts approved by a registered professional engineer and used to design a protective system.
- BB. Traversable: The ability to travel across or through (back and forth, sideways, up, or down).
- CC. Trench (trench excavation): A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is not greater than 15 feet. If forms or other structures are installed or constructed in an excavation as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet or less, the excavation is also considered to be a trench.
- DD. Underpinning: The process of strengthening the foundation of an existing building or structure.
- EE. Uprights/Sheeting: The vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members are closely spaced, in contact with or interconnected to each other, are often called "sheeting."
- FF. Wales: Horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical member of the shoring system or earth.

5. Roles and Responsibilities

- A. District Executives/Bureau Directors
 - (1) Ensure the proper and timely implementation of this protocol.
 - (2) Ensure all employees are provided the resources and training as outlined in this protocol.
 - (3) Ensure employees are provided with the required and appropriate PPE and other safety equipment such as trench boxes, shield/shoring/sloping systems, etc. to ensure safe entry and work involving excavations and trenches.
- B. Employee Safety Division
 - (1) Maintain this protocol.
 - (2) Periodically conduct inspections of excavation and trenching operations to ensure safe procedures are followed and provide feedback accordingly.
 - (3) Ensure that the overall protocol is evaluated annually for effectiveness or updates.
 - (4) Maintain records of completed assessments and facilitate trainings.
- C. Registered Professional Engineer (RPE)
 - (1) Review all excavation projects of 20 feet or greater in depth prior to the beginning of work.
 - (2) Serve as the competent person if another competent person is not available.
 - (3) Design protective systems for excavations of 20 feet or greater in depth.
 - (4) Assist with equipment needs.
 - (5) Design support systems for buildings and other objects (such as trees) near the excavation, when needed.
 - (6) Inform the Employee Safety and Training Division of excavation expected to be greater than 20 feet during the design phase.
 - (7) Design vehicle crossings for all excavation and trenching sites requiring them.

D. Competent Person

- (1) Determine and implement protective measures.
- (2) Determine and implement atmospheric monitoring.
- (3) Conduct the Excavation Inspection Worksheet Form (P-68) when applicable.
- (4) Inform the Employee Safety and Training Division of excavations requiring an RPE.
- (5) Be present for all excavations with a depth of at least four feet due to potential hazardous atmospheres that may exist and for excavations less than four feet in depth when potential atmospheric hazards may exist.
- (6) Be present for all excavations with a depth of five feet or greater due to the protective measure requirements and for excavations less than five feet when protective measures are deemed necessary due to soil instability.
- (7) Complete Environmental Due Diligence Investigation (EDD) Form (D-1) and Authorization to Enter and Deposit Material Form (M-666). Contact the district SEMP coordinator for mitigation of hazardous waste(s) and DEP certification of clean fill FP-001, when necessary.
- (8) Conduct inspections of the entire excavation site according to Section 11 of this protocol.
 - a. Daily and before the start of each shift.
 - b. As dictated by the work being done in the trench.
 - c. After every rainstorm.
 - d. When fissures, tension cracks, sloughing, undercutting, water seepage, bulging at the bottom or similar conditions occur.
 - e. When there is a change in the size, location or placement of the spoil pile where the spoil pile may create a hazard.
 - f. When there is any indication of change or movement in adjacent structures.

E. Managers/Supervisors

- (1) Make arrangements (as necessary) with the appropriate utility company for the protection, removal, shutdown or relocation of underground installations and pursuant to the requirements within Section 6.C of this protocol. If it is not possible to establish the exact locations of these installations, the work may proceed with caution if detection equipment or other safe and acceptable means are used to locate the utility.
- (2) Contact the Division Chief of Maintenance Technical Leadership for highway lighting around interchanges and PennDOT fiber lines.
- (3) Contact the RPE to discuss equipment needs at excavations of 20 feet or greater.
- (4) Ensure the excavation work is being performed in compliance with this protocol and applicable best practices.
- (5) Immediately contact emergency services and the applicable utility company if a utility line is struck.
- (6) Serve as the competent person.

F. Employees

- (1) Comply with all PennDOT safety rules and regulations concerning excavations and trenches.
- (2) Attend required training or instruction.
- (3) Never enter an excavation or trench that does not have safeguards in place.
- (4) Report any deficiencies observed to the competent person and/or manager/supervisor immediately.

6. Procedures

- A. Personal Protective Equipment (PPE) shall follow the requirements of Protocol 2 Personal Protective Equipment of Pub 445M, Manual for Employee Safety and Health (MESH).

The following PPE shall be worn when conducting excavation work:

- (1) Head protection;
- (2) Footwear; and
- (3) High visibility apparel.

- B. Excavation Inspection Worksheet

- (1) Excavation Inspection Worksheet (Form P-68) shall be used to assist in pre-job planning and throughout the excavation project. This worksheet shall be used to assist with the necessary documentation as required by the protocol.
- (2) The worksheet shall be completed by the competent person for every excavation or trench that is five feet or greater in depth or for any trench less than five feet in depth with a significant risk of cave-in or four feet in depth when there is an atmospheric hazard or the potential for an atmospheric hazard to exist.
- (3) The worksheet shall then be submitted to the Employee Safety and Training Division for review once the excavation or trench project is completed.

- C. Underground Utilities

- (1) Ensure there is an active PA One Call ticket for the area being excavated by machinery.
 - a. A PA One Call ticket can be obtained by calling 8-1-1 or reported online www.pa1call.org
 - b. The call center is open 24/7/365. You must provide a minimum of three business days' notice (that does not include commonwealth holidays or weekends) but not more than ten business days prior to the start of the excavation.
 - c. Complex projects could be maintenance excavation or construction projects. A PA One Call notification is required for complex projects 10 business days prior to the start of work.
- (2) PennDOT is NOT exempt:
 - a. While performing excavation or demolition greater than 24 inches (within commonwealth owned right-of-ways) measured from the top of the highest road surface elevation.
 - b. While performing minor routine maintenance greater than 18 inches measured from the top of the highest road surface elevation (within the right-of-way).
 - c. In either case, PennDOT is required to submit a PA One Call notification.
- (3) PennDOT is exempt:
 - a. When performing excavation or demolition less than 24 inches (within commonwealth owned right-of-ways) measured from the top of the highest road surface elevation.
 - b. While performing minor routine maintenance less than 18 inches (within the right-of-way) measured from the top of the highest road surface elevation.
 - c. Activities exempt from notification are vacuuming and high pressure water excavation.
- (4) PennDOT or designated representative (utilities division) must coordinate with utilities to identify underground facilities in the design phase.
- (5) PennDOT and consultant designers are responsible for submitting a PA One Call notification for design and planning purposes.
 - a. The designer must submit notification between 10 and 90 days prior to final design.
 - b. The PA One Call phone number and the notification serial number must be printed together on the drawings.
 - i. If the proposed excavation or demolition areas change, a new notification to PA One Call must be submitted.

- (6) Utility lines should be located by hand digging in the vicinity of the line.
- (7) The following describes the meaning of the color of temporary markings:
 - a. White – proposed excavation.
 - b. Pink – temporary survey markings.
 - c. Red – electric power lines, cables, conduit and lighting cables.
 - d. Yellow – gas, oil, steam, petroleum or gaseous materials.
 - e. Orange – communication, alarm or signal lines, cables or conduit and traffic loops.
 - f. Blue – potable water.
 - g. Purple – reclaimed water, irrigation and slurry lines.
 - h. Green- sewer and drains.
- (8) If there is any type of an emergency such as damage to a utility line, PennDOT as the project owner is required to file an Alleged Violation Report (AVR). PennDOT has ten days to reply with our response to the damage.
- (9) If a contractor damages a facility while working on PennDOT's behalf, the contractor must contact PennDOT to provide a description of damage, location, and severity.
 - a. If a gas line is hit, operations must stop, the manager/supervisor shall call 911 immediately, and then PA One Call. The manager/supervisor is also responsible to contact the gas company immediately, eliminate sources of ignition, secure the area – evacuate as needed, check nearby buildings and be alert to multiple leaks (possibly where the gas utility was struck and/or pulled and broken inside nearby buildings) and stay upwind of the leak.
 - b. If an electric line is hit, the manager/supervisor is responsible to stop operations, call 911 immediately, and then PA One Call. The manager/supervisor is also responsible to secure the area, be alert to energized wires, construction equipment and other metal objects (the ground near the damage may also become energized) and stay away from utility holes and underground vaults.
- (10) To learn more about PennDOT's role and responsibility with PA One Call there is a web-based training available.

D. Overhead Cables and Utilities

When working near overhead utilities, a minimum of 10 feet shall be maintained at all times. When working near overhead utility lines and the potential exists for an extended piece of equipment to be within the 10 feet of the utilities, a spotter shall be utilized.

E. Structures

Shoring, bracing and underpinning shall be used to protect workers when working in excavations near buildings and structures.

- (1) An excavation cannot be below the level of the base of the footing of any foundation or retaining wall unless it has been held in place by underpinning or other support systems that have been assessed and approved by an RPE.

F. Protection of the Public

- (1) Excavations shall not be accessed by the general public and all temporary excavations shall be backfilled as soon as possible. Barricades, lighting and postings shall be installed as appropriate prior to the start of excavation operations.
- (2) In addition to the requirements of Pub 213, Temporary Traffic Control Guidelines, any additional type of barriers/barricades used to prevent the general public from accessing the excavation shall be determined in the field depending on the location, condition and any other factors of the excavation.

- (3) Guardrails, physical barricades, construction fences or barricade tape shall be installed as needed around excavations adjacent to walkways, roads, paths or other areas of pedestrian traffic. The use of barricade tape alone is not considered a sufficient method of isolation when the excavation is unattended. If an excavation is left unattended the use of substantial physical barriers is required, including the use of guardrails or fences for excavations greater than 3 feet in depth.
- (4) Warning lights or other illumination shall be used as necessary for the safety of the public at night.
- (5) Wells, holes, pits and similar excavations shall be effectively barricaded or covered and posted.
- (6) Walkways or bridges used by pedestrians to cross excavations shall be equipped with standard guardrails and toe boards.

G. Surface Encumbrances

All equipment, materials, vehicles, supplies, buildings, roadways, trees, utility vaults, boulders, etc. that could present a hazard to employees working in the excavation shall be removed or supported as necessary to protect employees.

H. Surcharge Loads

Excavations can be exposed to hazards from surcharge loads due to heavy equipment. Any equipment weighing more than 20,000 pounds shall be kept back from the excavation at a fixed distance when employees are within the excavation or trench. For every foot in depth of the excavation, equipment weighing more than 20,000 pounds shall be kept back one foot. For example, for a trench that is six feet deep, the excavator shall be back six feet from the lip of the trench.

(1) Live Load Traffic Surcharge

- a. Loading limits – For spans over 40 feet, carrying live traffic loads (staged construction) or over live traffic, limit the stockpiling of material and staging of equipment on a non-weight posted completed bridge with the following:
 - I. Individual material stockpile including but not limited to pallets of products, reinforcement bar bundles, aggregate piles) – Limited to one individual stockpile with a maximum weight of 250 pounds/square foot and a maximum size of 100 square feet.
 - II. Multiple material stockpiles – Maximum weight of 65 pounds/square foot with a maximum total stockpile area of 100 square feet.
 - III. Combinations of material stockpiles, vehicles, other materials and equipment are limited to a maximum total weight of 100,000 pounds per span in any work zone width less than 24 feet, and a maximum total weight of 200,000 pounds per span for work zones greater than or equal to 24 feet wide, provided loading limits in Sections 105.17(a) 1 and 2 are not exceeded. The force effects produced by combinations of material stockpiles, vehicles and other materials and equipment are limited to the force effects produced by vehicles of legal configuration evaluated at operating rating levels as defined in Pub 238, Bridge Safety Inspection Manual. On a weight posted completed bridge, the above thresholds are to be reduced proportionately based on the ratio of the posted load limit(s) to the legal load limit(s).
- (a). If loads are proposed that will exceed the above loading limits or loads are proposed to be placed on an incomplete bridge, submit analytical calculations showing the flexural, shear, and axial stresses due to the construction loadings do not exceed the operating stress levels as defined in Pub 238 for the main load carrying members of the structure or the deck slab.

- b. Placement of a crane – The contractor of the crane service must submit a working drawing showing the location of the crane, matting, and all other loads and denote their weights. The drawing must be signed by a PennDOT person on the job to ensure there are no questions when the crane is being setup. Submit analytical calculations showing that flexural, shear, and axial stresses due to construction loadings do not exceed the operating stress levels as defined in Pub 238 for the main load carrying members of the structure or the deck slab. Provide matting to protect the deck slab from damage. Placement of cranes is not allowed on newly constructed bridge decks until the deck concrete has cured for a minimum of 14 calendar days and has attained a minimum compressive strength of 4,000 pounds per square inch.
 - c. Additional information on live load traffic surcharges can be found in Pub 15M, Design Manual, Part Four, Chapter Three.
- I. Exposure to Falling Loads
- (1) Employees are not allowed in the excavation while heavy equipment is digging. Employees shall not work under loads being lifted or moved by heavy equipment used for digging or lifting. Employees are required to stand away from the equipment that is being loaded or unloaded to avoid being struck by falling materials or spillage.
 - (2) During backfill operations when there is an exposure to an overhead load, employees are not permitted to be in the excavation or trench.
 - (3) Operators may remain inside the cab of the dump trucks if they are equipped with proper overhead cab protection/cab shield. Employees must remove themselves from dump trucks that do not provide adequate overhead cab protection, due to being modified from original manufacturer design.
- J. Standing Water and Water Accumulation
- Employees shall not enter or work in excavations with standing water or in which water is accumulating unless adequate protection is provided by:
- (1) Use of special support or shield systems approved by an RPE; or
 - (2) Water removal equipment used and monitored by a competent person; or
 - (3) Safety harnesses and lifelines used in conformance with Protocol 15, Fall Prevention and Protection.
 - (4) During rainstorms or water intrusions, employees shall exit the excavation or trench immediately.
 - (5) The excavation shall be carefully inspected by a competent person after each rainstorm or water intrusion and before employees are permitted to re-enter the excavation or trench.
 - (6) Protective measures such as diversion ditches and dikes shall be used to limit surface runoff water from entering the excavation or trench.
- K. Access and Egress
- (1) If an excavation or trench is four feet or deeper, stairways, ramps or ladders shall be used as a safe means of access and egress. For trenches, the employee shall not have to travel more than 25 feet of lateral travel to reach the stairway, ramp or ladder.
 - a. If a ladder is used, it shall be secured and extend three feet above the landing. Ladder hooks, clamps, or rope are acceptable means of securement. Ladders designed specifically for use with trench boxes shall be installed according to manufacturer's instructions.
 - b. Employees shall maintain three points of contact at all times on ladders.
 - c. All ladders should comply with Protocol 14, Portable Ladder Safety.
 - d. The exception to this would be when sloping at a grade of 4:1 or greater. This will allow the competent person the option to utilize the traversable slope for access and egress and replace the use of stairways, ramps, or ladders. This must be determined during the pre-planning phase and prior to field activities.

- (2) All spoil piles should be stored a minimum of two feet from the sides of the excavation and not block the safe means of access or egress.
 - a. Placing spoil piles closer than two feet from the sides of the excavation can be hazardous and has the capability of materials falling into the trench. However, retaining devices such as sheet piles and masonry walls shall be used if there is a need to place the spoil pile closer than two feet from the sides of the excavation. Also, the RPE would need to sign off that the retaining device being used is able to resist the force and is not putting extra weight too close to the trench where there is a potential for it to collapse.
- (3) If work is in or around traffic, signs and barricades shall be utilized to ensure the safety of employees, vehicular traffic and pedestrians in accordance with Pub 213 requirements and OSHA standards for signage.
- (4) When necessary, walkways or bridges shall be provided for employee foot traffic and when needed shall:
 - a. Have a safety factor of four. For example, the walkways or bridges need to be able to withstand four times its maximum intended load including tools, equipment, machinery and employees.
 - b. Have a minimum clear width of 20 inches.
 - c. Be equipped with guardrails and toe boards. Criteria for guardrails:
 - I Top rails shall be 42 inches high, plus or minus three inches above walking/working level (39-45 inches high) and withstand 200 lbs. of force. When 200 lbs. of force is applied at the top edge in a downward direction, it shall not deflect to a height less than 39 inches.
 - II. Midrails shall be installed at a height midway between the top edge of the guardrail system and the walking/working surface.
 - III. Toe boards shall be a minimum of 3 ½ inches high with no more than ¼ inch clearance above the walking/working surface. They also must be able to withstand 50 lbs. of force.
 - d. Extend at least two feet past the surface edge of the trench.

7. Hazardous Atmosphere

- A. Excavations and trenches four feet or deeper that have the potential for toxic substances or hazardous atmospheres shall be tested at least daily.
- B. Testing shall be conducted by the competent person and before employees enter the excavation or trench.
- C. The competent person shall utilize a four-gas meter to test the excavation or trench for toxic substances or hazardous atmospheres and follow the requirements within Protocol 7, Confined Space Entry, Section 11 Atmospheric Monitoring.
- D. Acceptable results for atmospheres. These include atmospheres with:
 - (1) Oxygen (must be between 19.5% and 23.5%);
 - (2) LEL/COMB (must be less than 10% of LEL for flammable present);
 - (3) Carbon monoxide (must be less than 25 ppm); and
 - (4) Hydrogen sulfide (must be less than 10 ppm)

8. Atmospheric Monitoring

A. Acceptable Results

- (1) % oxygen (must be between 19.5% and 23.5%);
- (2) % LEL/COMB (must be less than 10% of LEL for flammable present);
- (3) Carbon monoxide (must be less than 25 ppm);
- (4) Hydrogen sulfide (must be less than 10 ppm); and
- (5) Any other identified potentially hazardous chemical must be measured in addition to the above, and levels maintained below the established OSHA PEL and STEL through continuous forced ventilation.

B. Equipment Requirements

- (1) At minimum, atmospheric monitors must be able to simultaneously monitor all the following:
 - a. % oxygen
 - b. % LEL
 - c. % carbon monoxide (CO)
 - d. Hydrogen sulfide (H₂S)
- (2) Bump Testing and Calibration
 - a. All atmospheric monitors will be Bump Tested before each use following the manufacturer's procedures.
 - b. Each meter will also be bench calibrated with calibration gas standards at least every three months following the manufacturer's procedures.
 - c. Any monitoring equipment that cannot be accurately calibrated will be immediately removed from service and returned to the manufacturer for repair or replacement.

9. Soil Classification

A. Requirements

- (1) The competent person shall perform a manual and visual inspection to determine the soil classification daily, prior to the start of each shift, as dictated by the work being done, and after each rainstorm or other potentially hazardous event. If the soil has been classified as type C soil, then only a visual inspection is required instead of both a manual and visual inspection.
- (2) Soil shall be classified by its cohesiveness or how its strength holds it together.
- (3) When working with layered soils, they shall be classified in accordance with the weakest layer. However, each layer may be classified individually where a more stable layer lies under a less stable layer.
- (4) The soil classification shall be documented on the Excavation Inspection Worksheet Form (P-68). Include a plan view and cross-section sketch of the site to help show the weak soil layers and other important aspects of the site for someone to understand the soil layers who may not be present at the site.
- (5) For additional information on various soil tests reference Pub 222, Geotechnical Investigation Manual.

B. Soil classifications include stable rock, Type A, Type B and Type C. Stability is greatest in stable rock and decreases through Type A and B to Type C, which is the least stable. The soil classification shall determine what type of protection is acceptable prior to entering the excavation. Type C soil is the most common soil within Pennsylvania, when in doubt or testing remains unclear, treat the soil as Type C.

- (1) Stable Rock
 - a. Natural solid mineral that can be excavated with vertical sides and remain intact while exposed.

- (2) Type A Soil
 - a. Cohesive soils with an unconfined compressive strength of 1.5 “tons per square foot” (tsf) or greater.
 - b. Cemented soils like caliche and hardpan are considered Type A.
 - c. Soil is not Type A if it is fissured, the soil is subject to vibration from heavy traffic, pile driving or similar effects, soil has been previously disturbed, or the material is subject to other factors that would require it to be classified as less stable material.
 - (3) Type B Soil
 - a. Cohesive soil with an unconfined compressive strength greater than 0.5 tsf, but less than 1.5 tsf.
 - b. Soil such as angular gravel and silt.
 - c. Soil that meets the unconfined compressive strength requirements of Type A soil, but is fissured or subject to vibration.
 - d. Dry rock that is unstable.
 - (4) Type C Soil
 - a. Cohesive soil with an unconfined compressive strength of 0.5 tsf or less.
 - b. Most common soil in Pennsylvania.
 - c. Granular soils including gravel, sand and loamy sand.
 - d. Submerged soil or soil from which water is freely seeping.
 - e. Submerged rock that is not stable.
- C. Manual tests can include any of the following:
- (1) The pocket penetrometer test utilizes a lightweight instrument to determine the cohesiveness of soil. To operate, the competent person should slide the ring down against the handle of the penetrometer. The handle should then be gripped, and the tip of the penetrometer pushed into the soil so the groove marked on the tip is even with the level of soil. Once this is done, the scale can be read to determine the unconfined compression strength. If this method is used, multiple tests should be conducted with different clumps of soil to get an average unconfined compressive strength in order to get a more accurate reading.
 - (2) The field sedimentation test requires an empty, flat bottomed jar at least seven inches tall. The soil is filled approximately one and a half inches to two inches and the soil level is marked on the jar. Five inches of water is added on top of the soil and shaken until all soil is suspended in the water. The spot is marked where the material has settled after 30 seconds and again after three minutes, then the percentages of sand or silt in the soil is determined.
 - (3) Three types of plasticity tests
 - a. The cohesion ball test requires placing a small amount of soil in the palm of the hand and adding water if it is dry. The soil is then rolled into a ball and its ability to remain in that shape is observed. The ball is then tossed in the air about one foot from the palm and caught. The competent person then observes whether or not the ball breaks when caught. If the ball remains intact throughout these tests, the soil is cohesive. The ball is then squeezed in the palm of the hand to test its ability to remain intact. If the ball squeezes over the thumb with little to no breaking of the soil, it has good cohesive properties.
 - b. The ribbon test involves gathering a small handful of soil in the palm of the hand and adding water if it's dry. The soil is then rolled into a cylindrical shape ½ inch -3/4 inch in diameter. The soil is then observed to see if it remains in this shape as it is rolled up. The soil is then grasped in the palm and the competent person must start pinching an

end of the roll down to a ribbon approximately 1/8 inch-1/4 inch thick, then move down the roll and allow the ribbon to hang freely. A ribbon of at least 6 inches indicates a cohesive soil.

- c. The penciling test requires a small amount of soil to be placed in the palm of the hand and water added if the soil is dry. The soil is then rolled into a cylindrical shape approximately 1/8 inch -1/4 inch in diameter. The soil is then observed to see if the roll holds its shape. One end of the roll is then grabbed between the pointer finger and thumb and held vertically, moving the fingers back on the roll until it breaks. A cohesive soil should be able to withstand a roll length of two inches before breaking off.
 - (4) For the thumb penetration test, a natural clump of soil is picked from the spoil pile. The clump should have some moisture to it and no additional water should be added. The competent person should attempt to push their thumb into the soil clump and observe how much resistance there was from the soil and how far in the thumb went. The amount of penetration determines the soil type.
 - (5) The Shearvane/Torvane test involves compact instruments used to get the shear strength of a soil. To use, the instrument should be reset to zero and the blades should be pushed completely into the soil. The top of the instrument should be twisted until a failure occurs and slowly untwist. The number shown should be doubled to get the unconfined compressive strength. If this method is used, multiple tests should be conducted with different clumps of soil to get an average unconfined compressive strength in order to get a more accurate reading.
- D. Visual checks shall evaluate the conditions around the site including the soil adjacent to the site and the soil being excavated.
- (1) Identify any signs of vibration.
 - (2) Check for crack-line openings along with the failure zone, look for existing utilities that indicate that the soil has been previously disturbed and observe the open side of the excavation for indications of layered geologic structuring.
 - (3) Look for signs of bulging, boiling or sloughing, as well as signs of water seepage from the sides or bottom of the excavation.
 - (4) Ensure spoil pile is located at least two feet from the lip of the trench.

10. Protective Systems

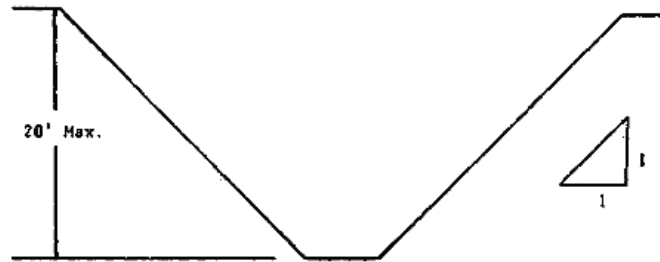
- A. In excavations greater than five feet in depth or if instability is noticed in trenches less than five feet in depth, a method to protect employees entering the excavation from a cave-in shall be employed.
- B. Excavations under the base of the footing of a foundation or wall require a support system designed by an RPE. Sidewalks, pavement, utility vaults or other similar structures shall not be undermined unless a support system or another method of protection is provided to protect employees from their potential collapse.
- C. Sloping

The maximum allowable slopes for excavations less than 20 feet based on soil type and angle to the horizontal are as follows:

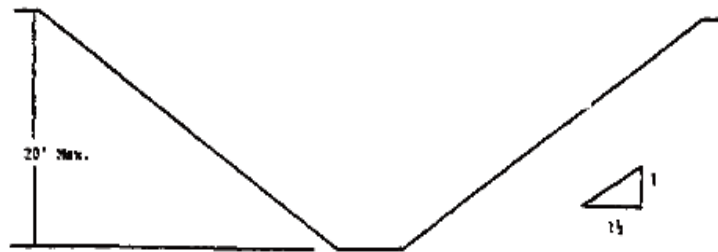
- (1) All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 3/4: 1 for Type A soil.



- (2) All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 for Type B soil.



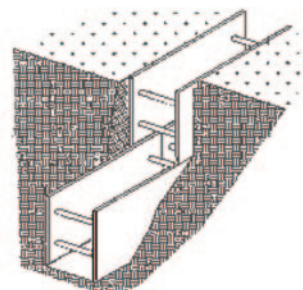
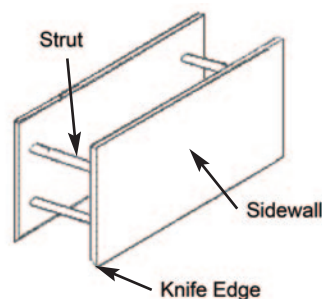
- (3) All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1 ½: 1 for Type C soil.



- D. Exception to this would be when sloping at a grade of 4:1 or greater. This will allow the competent person the option to utilize the traversable slope for access and egress and replace the use of stairways, ramps, or ladders. This must be determined during the pre-planning phase and prior to field activities.

E. Shielding

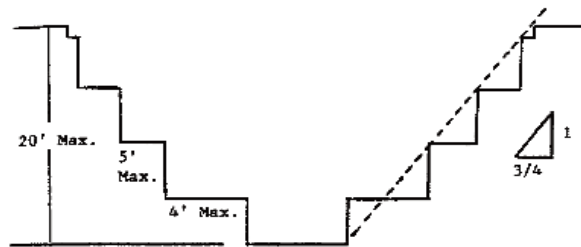
- (1) Only trench boxes designed or certified by a RPE shall be used. To those trenches for which the shield is certified is limited. (e.g. maximum depth and material). The manufacturer shall approve any repairs or modifications to the shields.
- (2) A registration plate on the shield or tabulated date shall be on file at the jobsite.
- (3) Shields shall not have any lateral movement when installed.
- (4) The excavated area between the outside of the trench box and the face of the trench shall be as small as possible. The space between the trench box and the excavation side should be backfilled to prevent lateral movement of the box.
- (5) Trench boxes may be used in combination with sloping and benching. The trench box shall extend at least 18 inches above the surrounding area if there is sloping toward the excavation.
- (6) Shields shall be placed two feet above the bottom of an excavation, provided they are calculated to support the full depth of the excavation and there is no caving under or behind the shield.
- (7) Employees shall enter and leave the shielded area in a protected manner, such as by a ladder or ramp. Employees shall not remain in the shielded area while it is being moved.



F. Benching

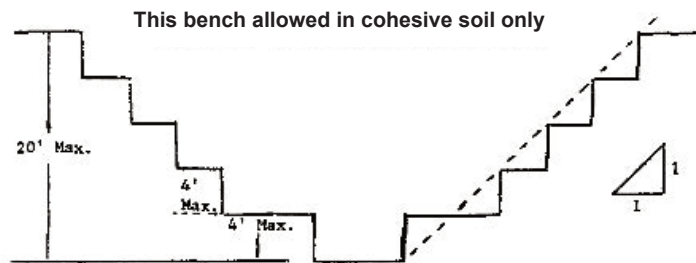
The maximum allowable benching for excavations less than 20 feet based on soil type and angle to the horizontal are as follows:

- (1) All benched excavations 20 feet or less in depth shall have a maximum allowable bench of $\frac{3}{4}$ to 1 for Type A soil.



MULTIPLE BENCH

- (2) All benched excavations 20 feet or less in depth shall have a maximum allowable bench of 1:1 for Type B soil:



MULTIPLE BENCH

- (3) Type C soil is prohibited to be benched.

F. Shoring Systems

Shoring utilizes a framework of vertical members (uprights), horizontal members (wales) and cross braces to support the sides of the excavation to prevent a cave-in. Metal hydraulic, mechanical or timber shoring are common examples.

G. Exceptions to using protective systems:

- (1) Excavations that are made entirely in stable rock.
- (2) Excavations that are less than five feet deep and declared safe by a competent person.

11. Inspections

Prior to entry into an excavation, employees will verify the daily inspection and soil classification with the competent person. Daily inspections of excavations, the adjacent areas and protective systems shall be made by the competent person for evidence of a situation that could result in a cave-in, indications of failure of protective systems, hazardous atmospheres or other hazardous conditions.

- A. All inspections shall be conducted by the competent person prior to the start of work and as needed throughout the shift.
- B. Inspections shall be made after every rainstorm or any other increasing hazard.

12. Training

A. Initial

Initial training is required for all employees that will be exposed to excavations and trenching and will include the following:

- (1) The three main methods for protecting employees from cave-ins;
- (2) Personal Protective Equipment;
- (3) Water accumulation;
- (4) Vehicles and equipment;
- (5) Spoil piles; and
- (6) Access and egress.

B. Competent Person

Competent persons covered by this protocol will be trained and need to demonstrate knowledge and understanding of at least the following:

- (1) Protective systems;
- (2) Personal Protective Equipment;
- (3) Water accumulation;
- (4) Vehicles and equipment;
- (5) Spoil piles;
- (6) Access and egress;
- (7) Completing Excavation Inspection Worksheet Form (P-68);
- (8) Hazardous atmospheres;
- (9) Air monitoring/testing equipment use;
- (10) Protection of the public;
- (11) Underground and overhead utilities;
- (12) Surcharge loads; and
- (13) Soil classification in regard to visual inspections and manual testing.

C. Refresher

Refresher training content will be the same as outlined in the initial training. Refresher training will be required under the following circumstances:

- (1) When changes in the workplace or in the types of safeguards used render previous training obsolete.
- (2) When inadequacies in an affected employee's knowledge indicate that the employee has not retained the requisite understanding or skill.
- (3) When there is an accident involving excavations or trenches. Training will be for all employees who were directly involved in the accident and planning of the trenching and excavation where the accident occurred. Management can include others in this training as they perceive necessary.
- (4) Every 2-3 years to account for safety equipment and policy/procedure updates.

13. Program Review

The effectiveness of this protocol in preventing workplace hazards, injuries and illnesses will be evaluated annually by the Employee Safety and Training Division with appropriate actions taken to address any deficiencies found.

14. Recordkeeping

Written training records detailing training and the date it was received will be documented and kept on file for each employee for the current and two previous fiscal years by the Employee Safety and Training Division.

Completed Excavation Inspection Worksheets form (P-68) will be kept on file for the current and two previous fiscal years by the Employee Safety and Training Division.

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Content
1-14	Original based on AIPP structure for protocols

Protocol 20 – Manual Lifting

Section	Topic	Page
1	Policy	P20 - 1
2	Resource	P20 - 1
3	Keys to Preventing Back Injuries	P20 - 1
4	Training	P20 - 2
5	Program Review	P20 - 2
6	Recordkeeping	P20 - 2

This protocol ensures that all employees whose job duties involve lifting receive information on the common causes of back injuries and measures that can be taken to prevent these injuries. Since back injuries represent a large portion of all injuries, PennDOT requires the guidelines in this protocol be followed to provide a safe work environment.

1. Policy

Working safely is a responsibility shared by all employees. Managers and supervisors are to ensure there is an awareness of these lifting guidelines to educate employees on how their work practices can reduce lifting injuries. Employees are to perform their duties in the safest manner possible, and adhere to all established safety rules, procedures, and work practices.

2. Resource

OSHA Technical Manual, Section VII, Chapter 1 – Back Disorders and Injuries

3. Keys to preventing back injuries include the following:

- A. Utilizing mechanical lifting devices

If there is a piece of equipment or assistive device that could move or lift an object over 50 pounds, that should be used.
- B. Work process planning
 - (1) Evaluate your jobs and tasks to reduce risk factors.
 - (2) Adjust your work tasks to allow for the body to be in a neutral position, if possible.
 - (3) Ensure materials are stored properly to prevent reaching or twisting while lifting.
 - (4) Ensure there is enough room to make the lift.
- C. Correct posture

Create good habits by being aware of your posture while at rest and during activity.
- D. Correct lifting techniques
 - (1) Know the weight and size of the item to be lifted.
 - (2) Your feet should be shoulder width apart, with one foot slightly in front of the other.
 - (3) To lift the object, you should squat down, bending with your knees.
 - (4) Ensure you have a firm grip on the item to be lifted.
 - (5) Maintain good posture by keeping your back straight.

- (6) As you lift the object, slowly lift by straightening your hips and keep the object close to your body.
- (7) If you must change direction with the object, utilize the pivot technique; turn your body by using your feet and not your waist.
- E. Perform stretches before you begin work and periodically throughout the day.
- F. Know your lifting limitations and ask for assistance if an object is too heavy or awkwardly shaped.
- G. When you are in adequate physical condition, you can lift more, bend more, and do more without overly stressing your muscles.

4. Training

A web-based training (WBT) was updated in 2022 and was released in August, 2022 as Safe Manual Lifting, 78SAFE000022.

5. Program Review

This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

6. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original.”

Section	Content
Intro-3	PPIM 14-165 Lifting Guidelines (Issued 2/18/14)
4-6	Original based on current practices

Protocol 21 - Union Relations

Section	Topic	Page
1	Program Implementation/Requirements	P21 - 1
2	Program Review	P21 - 1
3	Recordkeeping	P21 - 1

PennDOT is committed to incorporating a culture of safety into our everyday operations. AFSCME is in concurrence with these efforts. The intention is to bring awareness to our employees and ultimately reduce incidents of workplace injuries/fleet accidents with the support of AFSCME. This protocol establishes the communication requirements to formally invite AFSCME to attend and/or participate in events that promote employee safety.

1. Program Implementation/Requirements

- A. Effective January 8, 2015, County Maintenance Offices and Engineering District Offices will formally invite in writing AFSCME Local Union Officials, paid Union Staff Representatives, and District Council Directors to all major safety meetings held within their county/district, including but not limited to:
 - (1) Safety Committee Meetings
 - (2) Safety Stand Down Days
 - (3) Safety Summits
 - (4) Safety Culture Events
- B. County Maintenance Managers and Field Business Partners will be responsible for taking a lead role in establishing a formal invitation process. Invitations to Union Officials must be in writing and include all major safety meetings. All invitations and responses must be tracked and reports generated upon request.
- C. Comments and questions regarding this protocol should be directed to the Employee Relations and Workforce Support Division at 717-787-3460.

2. Program Review

This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

3. Recordkeeping

- A. Documentation of invitations to AFSCME will be maintained for three years.
- B. This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Content
Intro-1	PPIM 15-172: Union Invitation to Safety Meetings
2-3	Original based on AIPP requirements for protocol and current practices

Protocol 22 - Hazards Associated with Nesting Birds

Section	Topic	Page
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2	Scope	P22 - 1
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4	Hazard Assessment	P22 - 1
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1. Purpose

This protocol establishes policy to ensure that employees are made aware of the potential health hazards associated with bird droppings and to identify necessary precautions to minimize the potential for exposure.

2. Scope

This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

3. Personal Protective Equipment

The PPE necessary to prevent employee exposure to bird droppings in the work area either by dermal contact, ingestion and/or inhalation varies by task and location. The PPE shall be selected based on the condition of the area and the potential for disturbance from the work to be performed. Examples of PPE that may be required based on the work to be performed may include but are not limited to:

- A. Gloves rubber or nitrile
- B. Rubber boots
- C. Rain suit
- D. Goggles
- E. Face shields
- F. Respiratory protection - rated as P100 filtration (Dust masks/N95 respirators do not provide adequate protection from the hazards associated with bird droppings.)

4. Hazard Assessment

- A. Employees are often required to work in areas where birds have nested. Bridge structures and materials storage facilities are just two examples where such conditions may be found. This nesting can result in an accumulation of bird droppings, a condition which is potentially harmful to humans if the droppings contain fungal spores or bacteria and are disturbed, made airborne, and

inhaled or ingested. Wearing the appropriate PPE and following established procedures for cleanup will greatly minimize the chance of exposure.

- B. Accumulated bird droppings for the purpose of this protocol are defined as an accumulation of droppings that can easily be scooped up with a standard square point shovel.
- C. Three human diseases are known to be associated with bird droppings: histoplasmosis, cryptococcosis and psittacosis. The risk of infection is relatively low for the average person. Those most at risk for developing an infection are individuals with compromised immune systems.
 - (1) Histoplasmosis (histohplazmohsis) is a fungal infection caused by inhaling the spores of a fungus called *Histoplasma capsulatum* (*H. capsulatum*). This fungus grows in soil, especially soil that is enriched with an accumulation of bird droppings.
 - a. The infection can occur when the soil containing the fungus is disturbed and the spores become airborne. The soil under a roost usually has to have been enriched by bird droppings for a period of two or more years for the disease organism to reach significant levels. Fresh droppings have not been shown to present a health risk for histoplasmosis.
 - b. Generally, very few individuals will develop symptomatic disease after a low level exposure to material contaminated with *H. capsulatum* spores. Longer durations of exposure and exposure to higher concentrations of contaminated airborne material will increase an individual's risk of developing the infection.
 - c. Most infected individuals have no symptoms, or the symptoms are so mild that they do not seek medical treatment and may not even realize that their illness is histoplasmosis. Symptoms will usually appear within 3 to 17 days after exposure; with the average being 10 days. They can appear as a mild, flu-like respiratory illness (fatigue, fever and chest pains). Children, those with compromised immune systems and the elderly (particularly those with underlying illnesses such as diabetes and chronic lung disease) are at increased risk of developing symptomatic histoplasmosis.
 - d. It should be noted that histoplasmosis is not contagious, and it cannot be transmitted from one individual to another.
 - (2) Cryptococcosis (kriptohkohkosis) is a fungal infection caused by inhaling the airborne fungus *Cryptococcus neoformans*. This fungus is found in soil all over the world and is usually associated with bird droppings.
 - a. Most infections are mild and occur without symptoms in individuals with a healthy immune system response. However, individuals with compromised immune systems are more likely to develop the infection. For those with a compromised immune system, the generalized form of cryptococcosis begins with a pneumonia-like illness that affects the lungs.
 - b. The infection causes shortness of breath, coughing and fever. It can spread to other areas of the body, particularly the central nervous system, and is usually fatal if not treated.
 - c. The infection is not known to spread from one individual to another. It is very unlikely that healthy individuals will become infected even at high levels of exposure.
 - (3) Psittacosis (situhkohsis) is a rare infectious disease that mainly affects parrots and parrot-like birds, but may also affect other birds, such as pigeons.
 - a. It is caused by a bacterium, *chlamydia psittaci*, which is transmitted to humans from the droppings of infected birds.
 - b. Humans can acquire the infection, which causes flu-like symptoms, by inhaling infected particles from dried bird droppings.
 - c. No cases have been reported where the infection passed from one individual to another.

5. General Precautions

- A. When employees must work in or around areas where it is obvious that birds have nested, it is necessary to complete a thorough inspection to determine the extent of bird droppings that exist. This must be done before the work activities commence. The manager in charge of the operation is responsible for arranging the necessary inspection which may require coordination between other work units.
- B. Before conducting the inspection, determine whether it is necessary to don appropriate PPE to prevent exposure by dermal contact, ingestion and/or inhalation. As part of the inspection, identify if the bird droppings exist in the immediate work area or near the work area, and if they may be disturbed during work operations.
- C. Determine if the definition of accumulated bird droppings has been met.
- D. In the event that an employee's task would expose them to contact with accumulated bird droppings, the manager/supervisor should contact a third party contractor for removal, when possible.
- E. If possible, after droppings are cleaned up, a reasonable effort should be taken to exclude birds from the area. See Section 7, Preventative Measures.

6. Procedures for Removal of Bird Droppings

Following the inspection, if it is determined that the accumulated bird droppings must be removed, prior to beginning work in the area, the following procedures must be followed:

- A. DO NOT use compressed air to remove bird droppings. Compressed air will cause the material to become airborne and increases the potential for inhalation and ingestion, as well as increases the area of potential exposure.
- B. Wear PPE selected to prevent exposure by dermal contact, ingestion and/or inhalation based on the work performed.
- C. Spray and soak the droppings with water prior to shoveling or scraping away. This shall be done with a low velocity mist spray. Using a high pressured and/or concentrated stream such as a water hose should not be used as it could scatter the droppings before they are wetted. If practical, to help dissolve the material, bleach may be applied beforehand as well as after removal to disinfect.
- D. If the material cannot naturally drain out of the work area, the wet material should be placed in heavy duty plastic bags or another type of secure container and discarded with the regular trash. After cleaning, PPE is no longer necessary, unless required for the work operation being performed.
- E. If any employees were to be exposed, the manager/supervisor should instruct the employees to be aware of the symptoms of histoplasmosis, cryptococcosis, and psittacosis and report these symptoms to their supervisor as soon as they begin.

7. Preventative Measures

- A. Anti-roosting measures can be implemented to prevent birds from nesting. Installation of netting in open storage facilities may be necessary to prevent nesting and the accumulation of bird droppings.
- B. If the potential for exposure to bird droppings exists, employees must observe a high degree of personal hygiene by washing their hands prior to eating or drinking. In addition, non-disposable PPE should be cleaned after use.

8. Contractors

If removal of droppings requires the advance work to be contracted out, the contractors conducting the work shall be informed in advance of the potential hazards associated with the removal of bird droppings and shall follow proper safety procedures as outlined in this protocol.

9. Training

Employee training shall be provided as applicable to this protocol by the manager/supervisor prior to beginning work. Training will consist of a crew discussion, a review of potential diseases associated with bird droppings and awareness of accumulated bird droppings.

10. Program Review

This protocol will be reviewed for any changes and updates of the procedures to make sure they are current and relevant. Details of the annual review will be documented under Recordkeeping.

11. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Content
1-6	PPIM 09127 Health Hazards Associated with Nesting Birds (Issued 6/17/09)
7-11	Original based AIPP requirements for protocols and current practices

Protocol 23 - Tree Trimming, Felling and Removal

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11	Signaling and Signal Equipment	P23 - 8
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This protocol established safety practices, means, methods and operations for all work tasks associated with trees such as, but not limited to, marking dangerous trees and trees/logs to be cut to length, felling, trimming, limbing, bucking, chipping, yarding, unloading, storing and transporting machines, equipment and employees to, from and between job sites regardless of the end use of the wood.

1. Policy

PennDOT is committed to ensuring that the risks associated with working with and around tree trimming, felling and removal hazards have been adequately and appropriately addressed. This protocol provides PennDOT employees with the basic information for assuring a safe workplace, recognizing tree trimming, felling and removal hazards which may cause serious injury or death.

2. Scope

This protocol applies to all PennDOT employees engaging in work with and around tree trimming, felling and removal operations.

Trees within the legal right-of-way which pose a hazard to adjacent properties, utilities, traffic or department personnel during removal operations, shall be scheduled for prompt removal by a professional contract tree expert.

3. Applicable Standards

- A. ANSI B175.11991 "Safety Requirements for Gasoline-Powered Chain Saws"
- B. OSHA 1910.266, Subpart R, Logging Operations
- C. Pub 23, Maintenance Manual – Chapter 13 Roadside Management
- D. Pub 235, Equipment Operator's Instructor Manual
- E. Pub 213, Temporary Traffic Control Guidelines

4. Definitions

- A. Backcut: The final cut in a felling operation.
- B. Ballistic Nylon: A nylon fabric of high tensile properties designed to provide protection from lacerations.
- C. Buck: To cut a felled tree into logs.
- D. Butt: The bottom of the felled part of a tree.
- E. Chock: A block, often wedge shaped, which is used to prevent movement (e.g., a log from rolling, a wheel from turning).
- F. Choker: A sling used to encircle the end of a log for yarding. One end is passed around the load, then through a loop eye, end fitting or other device at the other end of the sling. The end that passed through the end fitting or other device is then hooked to the lifting or pulling machine.
- G. Danger Tree: A standing tree that presents a hazard to employees due to conditions such as, but not limited to, deterioration or physical damage to the root system, trunk, stem or limbs and the direction and lean of the tree.
- H. Designated Person: An employee who has the requisite knowledge, training and experience to perform specific duties.
- I. Domino Felling: The partial cutting of multiple trees which are left standing and then pushed over with a pusher tree.
- J. Fell (fall): To cut down trees.
- K. Feller (faller): An employee who fells trees.
- L. Grounded: The placement of a component of a machine on the ground or on a device where it is firmly supported.
- M. Guarded: Covered, shielded, fenced, enclosed or otherwise protected by means of suitable enclosures, covers, casings, shields, troughs, railings, screens, mats, platforms or by location, to prevent injury.
- N. Kerf: A slit made by cutting with a saw.
- O. Landing: Any place where logs are laid after being yarded and before transport from the work site.
- P. Limbing: To cut branches off felled trees.
- Q. Lodged Tree (hung tree): A tree leaning against another tree or object which prevents it from falling to the ground.
- R. Log: A segment sawed or split from a felled tree, such as, but not limited to, a section, bolt (a short log, less than eight feet) or tree length.
- S. Machine: A piece of stationary or mobile equipment having a self-contained power source, that is operated off road and used for the movement of material. Machines include, but are not limited to tractors, skid loaders, front end loaders, graders, track hoes, wood chippers and excavators.
- T. Rated Capacity: The maximum load a system, vehicle, machine or piece of equipment was designed by the manufacturer to handle.
- U. Root Wad: The ball of a tree root and dirt that is pulled from the ground when a tree is uprooted.
- V. Sawyer: A person who saws timber.
- W. Serviceable Condition: A state or ability of a tool, machine, vehicle or other device to operate as it was intended by the manufacturer to operate.

- X. Skidding: The yarding of trees or logs by pulling or towing them across the ground.
- Y. Slope (grade): The increase or decrease in altitude over a horizontal distance expressed as a percentage. For example, a change of altitude of 20 feet (six meters) over a horizontal distance of 100 feet (30 meters) is expressed as a 20 percent slope.
- Z. Snag: Any standing dead tree or portion thereof.
- AA. Spring Pole: A tree, segment of a tree, limb or sapling which is under stress or tension due to the pressure or weight of another object.
- BB. Tie Down: Chain, cable, steel strips or fiber webbing and binders attached to a truck, trailer or other conveyance to secure loads and to prevent them from shifting or moving when they are being transported.
- CC. Trimming: To cut branches off trees that have not been felled.
- DD. Undercut: A notch cut in a tree to guide the direction of the tree fall and to prevent splitting or kickback.
- EE. Vehicle: A car, bus, truck, trailer or semitrailer owned, leased or rented by the employer that is used for transportation of employees or movement of material.
- FF. Windthrown Tree: Refers to trees uprooted or broken by wind.
- GG. Winching: The winding of cable or rope onto a spool or drum.
- HH. Yarding: The movement of logs from the place they are felled to a landing.

5. Roles and Responsibilities

- A. District Executives/Bureau Directors
 - (1) Ensure the proper and timely implementation of this protocol.
 - (2) Ensure all employees are provided the resources and training outlined in this protocol.
- B. Employee Safety and Training Division
 - (1) Establish PennDOT policy and guidance for implementing an effective tree trimming, felling and removal protocol.
 - (2) Conduct/oversee random inspections of work procedures and ensure all PPE is maintained properly through Form P6100, Crew Safety Inspection Checklist.
 - (3) Designate, develop, provide and/or coordinate employee training to affected employees as appropriate to their level of involvement in the protocol.
 - (4) Investigate and document all tree trimming, felling and removal related incidents.
 - (5) Provide or assist with technical guidance in conjunction with the Bureau of Maintenance and Bureau of Operations to the region/district/county level according to the requirements and procedures outlined in this protocol.
 - (6) Ensure the overall protocol is evaluated periodically for effectiveness and updates.
- C. Managers/Supervisors
 - (1) Conduct pre-job planning to ensure the hazards related to tree trimming, felling and removal operations are identified and addressed prior to the beginning of work.
 - (2) Ensure the proper equipment is available for employees performing tree trimming, felling and removal operations and that all employees engaged in the operation have been trained.
 - (3) Attend any necessary training to ensure employees understand and are implementing PennDOT's tree trimming, felling and removal procedures.

D. Employees

- (1) Understand and adhere to the procedures outlined in the tree trimming, felling and removal protocol.
- (2) Use, maintain and store tree trimming, felling and removal equipment in accordance with PennDOT procedures including PPE.
- (3) Bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees.
- (4) Adhere to training requirements that are outlined in Section 15, Training.
- (5) Report any tree trimming, felling and removal incidents, regardless of the severity of the injury to the employee.

6. Procedural Requirements**A. Tree Trimming and Felling**

- (1) A job site review shall be conducted before operations commence for tree trimming and felling to identify any hazards and corrective actions.
- (2) Trees shall be trimmed or felled in a manner that will not create a hazard for an employee, such as but not limited to, striking a rope, cable, power line or machine.
- (3) While manual trimming or felling is in process, the chain saw shall not be used to cut directly overhead.
- (4) The immediate manager/supervisor shall be consulted when unfamiliar or unusually hazardous conditions necessitate the supervisor's approval before cutting is commenced.
- (5) While manual trimming or felling is in progress, vehicles and equipment shall not be operated within two tree lengths of trees being manually trimmed or felled.
- (6) No employee shall approach a chain saw operator closer than two tree lengths of trees being trimmed or felled until the chain saw operator has acknowledged (signaled) that it is safe to do so.
- (7) No employee shall approach a mechanical felling operation closer than two tree lengths of the trees being felled until the machine operator has acknowledged that it is safe to do so.
- (8) Each danger tree shall be felled, removed or avoided. Each danger tree, including lodged trees and snags, shall be felled or removed using mechanical or other techniques that minimize employee exposure before work is commenced in the area of the danger tree. If the danger tree is not felled or removed, it shall be marked, and no work shall be conducted within two tree lengths of the danger tree unless the supervisor determines that a shorter distance will not create a hazard for an employee.
- (9) Each danger tree shall be carefully checked for signs of loose bark, broken branches and limbs or other damage before they are felled or removed. Accessible loose bark and other damage that may create a hazard for an employee shall be removed or held in place before felling or removing the tree.
- (10) Felling on any slope where rolling or sliding of trees or logs is reasonably foreseeable shall be done uphill from or on the same level as, previously felled trees.
- (11) Domino tree felling is highly dangerous and shall be the last considered method for felling multiple trees. A designated safe plan shall be developed and implemented before the commencement of operation.
- (12) The appropriate work zone traffic control set up shall be established. Refer to Pub 213, Temporary Traffic Control Guidelines for the appropriate Pennsylvania Typical Application (PATA).
- (13) The use of explosives and blasting agents is prohibited for tree trimming, felling and removal operations.

(14) Manual Felling

- a. Before felling is started, the feller shall plan and clear a retreat path. The retreat path shall extend diagonally away from the expected felling line unless the supervisor determines that such a retreat path poses a greater hazard than an alternate path. Once the backcut has been made, the feller shall immediately move to a safe distance away from the tree on the retreat path.
- b. Before each tree is felled, conditions such as, but not limited to, snow and ice accumulation, the wind, the lean of tree, dead limbs and the location of other trees, shall be evaluated by the feller and precautions taken so a hazard is not created for an employee.
- c. Each tree shall be checked for accumulations of snow and ice. Accumulations of snow and ice that may create a hazard for an employee shall be removed before felling is commenced in the area or the area shall be avoided.
- d. When a spring pole or other tree under stress is cut, no employee other than the feller shall be closer than two tree lengths when the stress is released.
- e. An undercut shall be made in each tree being felled unless the supervisor determines that felling the particular tree without an undercut will not create a hazard for an employee. The undercut shall be of a size so the tree will not split and will fall in the intended direction.
- f. A backcut shall be made in each tree being felled. The backcut shall leave sufficient hinge wood to hold the tree to the stump during most of its fall so that the hinge is able to guide the tree's fall in the intended direction.
- g. The backcut shall be above the level of the horizontal face cut in order to provide an adequate platform to prevent kickback.

EXCEPTIONS:

- I. The backcut may be at or below the horizontal face cut in tree pulling operations.
- II. This requirement does not apply to open face felling where two angled face cuts rather than a horizontal face cut are used.

(15) Limbing and Bucking

- a. Limbing and bucking on any slope where rolling or sliding of trees or logs is reasonably foreseeable shall be done on the uphill side of each tree or log.
- b. Before limbing or bucking windthrown trees, precautions shall be taken to prevent the root wad, butt or logs from striking an employee. These precautions include, but are not limited to, chocking or moving the tree to a stable position.

(16) Chipping

- a. The chipper shall be shut down and locked out in accordance with the requirements of Protocol 5, Lockout/Tagout when an authorized employee performs any servicing or maintenance.
- b. Detached trailer chippers shall be chocked during usage on any slope where rolling or sliding of the chipper is reasonably foreseeable.

(17) Mechanical Yarding

- a. No log shall be moved until each employee is in the clear.

7. Personal Protective Equipment (PPE) and Safety Equipment Requirements

- A. Managers/supervisors shall ensure that PPE and safety equipment is compliant with this protocol and maintained in a serviceable condition.
- B. Employees shall ensure that PPE is inspected before initial use during each work shift. Defects or damage shall be repaired, or the unserviceable PPE shall be replaced before work is commenced.
- C. The following PPE will be provided:
 - (1) Hand protection from puncture wounds, cuts and lacerations for employees.
 - (2) Chain saw chaps constructed with cut resistant material, such as ballistic nylon, are required and provided for employee's who operate a chain saw. The leg protection shall cover the full length of the thigh to the top of the boot on each leg to protect against contact with a moving chain saw. No one is permitted to operate a chain saw without chain saw chaps.
 - (3) A minimum classification of chain saw chaps shall conform to ATSM F1414 compliant, Type A trousers with a cut resistance of at least 45 mph (20m/s).
EXCEPTION: This requirement does not apply when an employee is working from an aerial lift or operating a pole saw.
 - (4) Head protection, in accordance with current policy. Reference Protocol 2, Personal Protective Equipment.
 - (5) Eye protection that is appropriate for the eye hazards an employee may be exposed to in accordance with current policy. Refer to Protocol 4, Sight Conservation.
 - (6) Face protection where there is potential for facial injury such as, but not limited to, operating a chipper. Logger type mesh screens must be worn by employees performing chain saw operations.
NOTE: The employee does not have to wear a separate eye protection device where face protection covering both the eyes and face is worn.
 - (7) A tearaway and high visibility vest shall be worn for employees operating the wood chipper.
 - (8) Seat belts shall be used for each vehicle or machine equipped with an enclosed cab, roll bar or overhead guards and for each operator of that vehicle or machine.
 - a. Managers/supervisors shall ensure that each employee uses the available seat belt while the vehicle or machine is being operated, that each employee securely and tightly fastens the seat belt to restrain the employee within the vehicle or machine cab.
 - b. Managers/supervisors shall ensure that seat belts are not removed from any vehicle or machine.
 - c. Managers/supervisors shall ensure that each seat belt is maintained in a serviceable condition.
 - d. Equipment Managers shall ensure the replacement of each seat belt which has been removed from any vehicle or machine that was equipped with seat belts at the time of manufacture.
 - e. If deficiencies are observed, it shall be documented on Form M-614 and deadlined according to Pub 177, Equipment Managers Manual.
 - (9) Employees shall ensure that the appropriate safety footwear is worn in accordance with current policy for all field operations. Refer to Protocol 2, Personal Protective Equipment, for additional information.
 - (10) Hearing protection shall always be worn for tree trimming, felling and removal operations. Refer to Protocol 3, Hearing Conservation, for additional information.
- D. All of the above PPE shall be carried on any vehicle that carries a chain saw.

Tree Trimming, Felling and Removal- PPE Chart								
	Head Protection	Face Protection (mesh-screen)	Eye Protection (rated ANSI Z87+)	Hearing Protection	Hand Protection (leather gloves)	Leg Protection (chaps) ATSM F1414 compliant	Foot Protection (above the ankle boot with good tread)	PennDOT issued high-visibility apparel
Tree Trimming and Felling	X	X	*	X	X	X	X	X
Manual Felling	X	X	*	X	X	X	X	X
Limbing and Bucking	X	X	*	X	X	X	X	X
Chipping	X	*	X	X	X		X	**
Mechanical Yarding	X	*	X	X	X		X	X
Pole Saw	X	*	X	X	X	*	X	X
Felling from aerial lift/bucket lift (pole saw)	X	*	X	X	X	*	X	X
Felling from aerial lift/bucket lift (chain saw)	X	X	*	X	X	*	X	X

X - Required PPE

* - Optional PPE

** - When wearing a PennDOT issued vest, it must be tearaway

The PPE shall meet or exceed the following specifications:

- (1) Logger type mesh screens shall be in the 'down' position.
- (2) Gloves shall be leather.
- (3) ANSI Class 2 as outer garment. Night operations require ANSI Class 3 outer garment.
- (4) Leg protection (chaps) shall be ATSM F1414 compliant, Type A trousers, with a cut resistance of at least 45 mph (20m/s).

8. First Aid Kits

- A. First aid kits shall be available at each work site where trees are being cut (e.g., felling, bucking, limbing) or in each crew cab. The number of first aid kits and the content of each kit shall reflect the degree of isolation, the number of employees and the hazards reasonably anticipated at the work site. Refer to Chapter M, Medical Supplies and Services, for additional information.

9. Emergency Callouts/Storm cleanup

- A. Shall only be performed for trees that are already down due to the environment.
- B. Shall not be performed during nighttime hours if trees are in an upright position.
- C. Portable lighting shall be established to mitigate hazards of darkness.
- D. All appropriate PPE shall be worn according to Protocol 2, Personal Protective Equipment.
- E. All temporary traffic controls shall be implemented according to Pub 213, Temporary Traffic Control Guidelines supplementing Federal Highway Administration's Manual on Uniform Traffic Control Devices for the applicable PATA.

10. Work Areas

- A. Employees shall be spaced, and the duties of each employee shall be organized so the actions of one employee will not create a hazard for any other employee.
- B. Work areas shall be assigned so that trees cannot fall into an adjacent occupied work area. The distance between adjacent occupied work areas shall be at least two tree lengths of the trees being felled. The distance between adjacent occupied work areas shall reflect the degree of slope, the density of the growth, the height of the trees, the soil structure and other hazards reasonably anticipated at that work site. A distance of greater than two tree lengths shall be maintained between adjacent occupied work areas on any slope where rolling or sliding of trees or logs is reasonably foreseeable.
- C. Each employee performing an operation covered in this protocol shall work in a position or location that is within visual or audible contact with another employee.
- D. The manager/supervisor shall account for each employee at the end of each work shift.
- E. The manager/supervisor is responsible for designating a lead employee to act as a spotter during felling, limbing and chipper operations to prevent anyone from entering the clear zone/two tree felling distance.

11. Signaling and Signal Equipment

- A. Hand signals or audible contact such as, but not limited to, whistles, horns or radios shall be utilized whenever noise, distance, restricted visibility or other factors prevent clear understanding of normal voice communications between employees.
- B. Engine noise, such as from a chain saw, is not an acceptable means of signaling. Other locally and regionally recognized signals may be used.
- C. Only a designated employee shall give signals, except in an emergency.
- D. Constant communication between employees shall be established before the commencement of work.

12. Overhead Electrical Lines

- A. Tree trimming, felling and removal operations near overhead electric lines shall conform to the requirements outlined in Protocol 1B, Electrical Safeguarding.
- B. The managers/supervisors shall notify the power company immediately if a felled tree makes contact with any power line. All employees shall remain clear of the area until the power company advises that there are no electrical hazards.
- C. NO ONE MAY FELL OR LIMB A TREE ENTANGLED OR LEANING ON AN OVERHEAD WIRE OR GUIDE WIRE.

13. Chain Saws

- A. Each chain saw placed into initial service after the effective date of this section shall be equipped with a chain brake and shall otherwise meet the requirements of the ANSI B175.11991 "Safety Requirements for Gasoline-Powered Chain Saws." Each chain saw placed into service before the effective date of this section shall be equipped with a protective device that minimizes chain saw kickback. No chain saw kickback device shall be removed or otherwise disabled.
 - (1) Kickback
 - a. Kickback occurs when the upper quadrant of the bar nose contacts a solid object or is pinched.
 - b. The reaction of the cutting force of the chain causes a rotational force on the chain saw in the direction opposite to the chain movement. This may fling the bar up and back in an uncontrolled arc mainly in the plane of the bar. Under some cutting circumstances, the bar moves towards the operator, who may suffer severe or fatal

injury if hit by the bar. Kickback may occur when the nose of the guide bar is pinched unexpectedly, unintentionally contacts solid material in the wood or is incorrectly used to begin a plunge or boring cut.

- c. Kickback can also occur during limbing.
 - d. The greater the force of the kickback reaction, the more difficult it becomes for the operator to control the saw.
 - e. Many factors influence the occurrence and force of the kickback reaction. These include chain speed, the speed at which the bar and chain contact the object, the angle of contact, the condition of the chain and other factors.
 - f. The type bar and saw chain used is an important factor in the occurrence and force of the kickback reaction.
- (2) To avoid kickback
- a. Hold the chain saw firmly with both hands and maintain a secure grip.
 - b. Be aware of the location of the guide bar nose at all times.
 - c. Never let the nose of the guide bar contact any object. Do not cut limbs with the nose of the guide bar. Be especially careful when cutting small, tough limbs, small size brush and saplings which may easily catch the chain.
 - d. Do not overreach.
 - e. Do not cut above shoulder height.
 - f. Begin cutting and continue at full throttle.
 - g. Cut only one log at a time.
 - h. Use extreme caution when re-entering a previous cut.
 - i. Be alert for shifting of the log or other forces that may cause the cut to close and pinch the chain.
 - j. Properly maintain the chain. Cut with a correctly sharpened, properly tensioned chain at all times.
 - k. Stand to the side of the cutting path of the chain saw.
- (3) Pushback
- a. Pushback occurs when the chain on the top bar suddenly stops when it is pinched, caught or encounters a foreign object in the wood. The reaction of the chain drives the saw straight back toward the operator and may cause loss of saw control. Pushback frequently occurs when the top of the bar is used for cutting.
- (4) To avoid pushback
- a. Be alert to forces or situations that may cause material to pinch the top of the chain.
 - b. Do not cut more than one log at a time.
- (5) Pull-in
- a. Pull-in occurs when the chain on the bottom of the bar is suddenly stopped. The chain on the bottom of the bar stops when it is pinched, caught or encounters a foreign object in the wood. The reaction of the chain pulls the saw forward and may cause the operator to lose control.
 - b. Pull-in frequently occurs when the bumper spike of the saw is not held securely against the tree or limb and when the chain is not rotating at full speed before it contacts the wood.
 - c. Use extreme caution when cutting small size brush and saplings which may easily catch the chain resulting in a loss of balance.

- (6) To avoid pull-in
 - a. Always start a cut with the chain rotating at full speed and the bumper spike in contact with the wood.
 - b. Pull-in may also be prevented by using wedges to open the kerf or cut.
 - (7) Each gasoline-powered chain saw shall be equipped with a continuous pressure throttle control system which will stop the chain when pressure on the throttle is released.
- B. Transporting/Fueling/Starting the Chain Saw
- (1) Carrying the chain saw
 - a. The chain saw shall be carried in a manner that will prevent operator contact with the cutting chain and muffler.
 - b. The motor shall be stopped.
 - c. The guide bar and saw chain shall be to the rear and the muffler away from the body.
 - d. When transporting the chain saw, use the appropriate chain guard (scabbard).
 - (2) Refueling the chain saw
 - a. Never refuel a hot saw. Do not refuel with the motor running.
 - b. Refer to the Safety Data Sheet (SDS) or the manufacturer's operating instructions for oil/fuel mixtures.
 - c. Fill tank on bare ground.
 - d. Wipe spilled fuel off the saw.
 - e. Restart the saw not less than ten feet from the fueling area.
 - f. Keep the handles dry, clean and free of oil or fuel mixture.
 - g. Use only approved safety containers for fuel.
 - (3) Starting the Chain Saw
 - a. Starting the chain saw on the ground.
 - I. Engage the chain brake and place the chain saw on firm ground or other solid surface in an open area.
 - II. Grip the front handlebar of the saw firmly with the left hand and press down. For saws with a rear handle level with the ground, put the toe of the right foot into the rear handle and press down.
 - III. Using the right hand pull out the starter grip slowly until a definite resistance is felt and then give it a brisk, strong pull.
 - b. Starting the chain saw off of the ground.
 - I. Engage the chain brake, grip the front handle of the chain saw firmly with the left hand.
 - II. Keep the arm on the front handle in a locked (straight) position.
 - III. Hold the rear handle of the saw tightly between the legs just above the knees. Maintain good balance and secure footing.
 - IV. Pull the starting grip slowly with the right hand until a definite resistance is felt and then give it a brisk, strong pull.
 - c. Starting Warnings
 - I. Be sure the guide bar and chain are clear of the body and all other obstructions and objects, including the ground. When the engine is started, the engine speed with the starting throttle lock engaged will be fast enough for the clutch to engage the sprocket and turn the chain.
 - II. Never attempt to start the chain saw when the guide bar is in a cut or kerf.

III. When pulling the starter grip, do not wrap the starting rope around the hands.

IV. Do not allow the grip to snap back but guide the starter rope slowly back to permit the rope to rewind properly.

C. Operation

- (1) The chain saw shall be operated and adjusted in accordance with the manufacturer's instructions.
- (2) Individuals that are minors and under the age of 18 are not allowed to operate a chain saw. Bystanders, especially children, shall not be allowed in the area where a chain saw is in use.
- (3) A chain catcher is designed to reduce the risk of personal injury in the event of a thrown or broken chain. Do not operate a chain saw with a damaged or missing catcher.
- (4) Inspect buffers periodically. Replace damaged, broken or excessively worn buffers immediately, since they may result in loss of control of the saw. A "sponginess" in the feel of the saw, increased vibration or increased "bottoming" during normal operation may indicate damage, breakage or excessive wear. Buffers shall always be replaced in sets.
- (5) Operate a chain saw only outdoors in a ventilated area, even if the chain saw is equipped with a catalytic converter.
- (6) Do not cut any material other than wood or wooden objects. Use the chain saw for cutting only. It is not designed for prying or shoveling away limbs, roots or other objects.
- (7) In order to keep control of the saw, always maintain a firm footing. Never work on a ladder, in a tree or on any other insecure support. Position the chain saw in such a way that the body is clear of the cutting attachment whenever the engine is running. Stand to the left of cut while bucking.
- (8) The chain saw operator shall be certain of footing before starting to cut. The chain saw shall not be used in a position or at a distance that could cause the operator to become off balance, to have insecure footing or to relinquish a firm grip on the saw.
- (9) Never use the saw with one hand.
- (10) Do not allow other persons to be near the running chain saw. Start and operate a saw without assistance.
- (11) Do not use a chain saw with incorrect idle speed. At correct idle speed, the chain should not rotate.
- (12) Never let the chain saw run unattended.
- (13) Do not operate a chain saw with the starting throttle lock engaged. Cutting with the starting throttle lock engaged does not permit the operator to have proper control of the chain saw or chain speed.
- (14) Never touch a chain with a hand or any part of the body when the engine is running, even when the chain is not rotating. The chain continues to rotate for a short period after the throttle trigger is released.
- (15) Proper tension of the chain is extremely important. If the chain becomes loose while cutting, shut off the engine and then tighten. Never try to tighten the chain while the engine is running.
- (16) The muffler and other parts of the engine become hot during operation and remain hot for a period of time after stopping the engine. To reduce risk of burns do not touch the muffler and other parts of the engine while they are hot.
- (17) Prior to felling any tree, the chain saw operator shall clear away brush or other potential obstacles which might interfere with cutting the tree or using the retreat path.
NOTE: The chain saw shall be shut off before the feller starts their retreat.
- (18) Be extremely cautious when working on slopes or uneven ground.

- (19) Avoid stumbling on obstacles such as stumps, roots or rocks and watch out for holes and ditches.
- (20) When cutting a limb that is under tension, be alert for spring back to prevent being struck when the tension in the wood fibers is released.
- (21) Do not put pressure on the chain saw when reaching the end of a cut. The pressure may cause the bar and rotating chain to pop out of the cut or kerf, go out of control and strike the operator or some other object.

14. Machines/Equipment

A. Wood chipper general requirements

- (1) PennDOT shall provide all equipment that is needed to perform all assigned duties.
- (2) The manager/supervisor shall ensure that each machine is maintained in serviceable condition.
- (3) Managers/supervisors shall ensure that each machine is inspected before initial use during each work shift. Employees shall report all defects or damage immediately and complete Form M-614. Supervisors shall ensure that all defects and damage are repaired and that any unserviceable machine is replaced before work is commenced.
- (4) The equipment manager/supervisor shall ensure that operating and maintenance instructions are available on the machine or in the area where the machine is being operated. Each machine operator and mechanic shall comply with the operating and maintenance instructions.
- (5) The manager/supervisor is responsible for establishing a safety spotter to ensure unauthorized employees have no access or come near the machine during operation.

B. Machine operation requirements

- (1) Each machine shall be started and operated only by a trained designated person.
- (2) Stationary logging machines and their components shall be anchored or otherwise stabilized to prevent movement during operation.
- (3) The rated capacity of any machine shall not be exceeded.
- (4) To maintain stability, the machine shall be operated within the limitations imposed by the manufacturer as described in the operating and maintenance instructions.
- (5) Before starting or moving any machine, the operator shall determine that no employee is in the path of the machine.
- (6) The machine shall be operated only from the operator's station or as otherwise recommended by the manufacturer.
- (7) The machine shall be operated at such a distance from employees and other machines such that operation will not create a hazard for an employee.
- (8) No employee shall ride on the equipment or load as per Chapter L, Recognition, Rules and Enforcement.
- (9) Before the operator leaves the operator's station of a machine, it shall be secured as follows:
 - a. The parking brake or brake locks shall be applied.
 - b. The transmission shall be placed in the manufacturer's specified park position.
 - c. Each moving element such as, but not limited to blades, buckets, saws and shears, shall be lowered to the ground or otherwise secured.
 - d. If a hydraulic or pneumatic storage device can move the moving elements such as, but not limited to, blades, buckets, saws and shears, after the machine is shut down,

the pressure or stored energy from the element shall be discharged as specified by the manufacturer.

- e. The rated capacity of any vehicle transporting a machine shall not be exceeded.
 - f. The machine shall be loaded, secured and unloaded so that it will not create a hazard for any employee.
 - g. Chocking shall be utilized for equipment parked/left on slopes.
- (10) Additional information can be found in Pub 235, Equipment Operator's Instructor Manual.

15. Training

- A. Training shall be provided by the department for each employee, including managers/supervisors.
- B. Prior to initial assignment, each employee shall work under the close supervision of a skilled and experienced designated person until the employee demonstrates the ability to safely perform their new duties independently.
- C. Current and new employees shall demonstrate that they can properly and safely perform the work tasks and operate the tools, equipment, machines and vehicles used in their job.
 - (1) Boom Mower-Employees shall be trained according to Pub 235 by an Operator Instructor for Boom Mower and hold a certification before operating such equipment.
 - (2) Aerial Lift-Employees shall be trained according to Pub 235 by an Operator Instructor for Aerial Lift Machine and hold a certification before utilizing a chain saw in the lift.
- D. Training shall be provided as follows:
 - (1) As soon as possible but not later than the effective date of this section for initial training for each current and new employee.
 - (2) Prior to initial assignment for each new employee.
 - (3) Whenever the employee is assigned new work tasks, tools, equipment, machines or vehicles.
 - (4) Whenever an employee demonstrates unsafe job performance.
- E. At a minimum, training shall consist of the following elements:
 - (1) Safe performance of assigned work tasks.
 - (2) Safe use, operation and maintenance of tools, machines and vehicles the employee uses or operates, including emphasis on understanding and following the manufacturer's operating and maintenance instructions, warnings and precautions.
 - (3) Recognition of safety and health hazards associated with the employee's specific work tasks, including the use of measures and work practices to prevent or control those hazards.
 - (4) Recognition, prevention and control of other safety and health hazards in the logging industry.
 - (5) Procedures, practices and requirements of the employer's work site.
 - (6) The requirements of this protocol.
 - (7) Training of an employee due to unsafe job performance or assignment of new work tasks, tools, equipment, machines or vehicles may be limited to those elements in the previous section which are relevant to the circumstances giving rise to the need for training.

- F. Refresher training
 - (1) New and current employees who have received training in any of the elements specified in the previous section are not required to be retrained in those elements.
 - (2) New and current employees shall be trained in the elements specified in the previous section for which they have not received prior training.
- G. First aid training requirements
 - (1) When applicable, employees including managers/supervisors shall be provided First Aid and CPR training meeting at least the requirements specified in Chapter N, Medical Supplies and Services.
 - (2) Region/district/county level management shall assure that each employee's First Aid and CPR training and/or certificate of training remain current.
- H. All training shall be conducted by a designated person.
- I. Records shall be maintained of the above training requirements for each employee.
 - (1) The most recent training certification shall be maintained.

16. Program Review

The effectiveness of this protocol in preventing workplace hazards, injuries and illnesses will be evaluated annually by the Employee Safety and Training Division with the appropriate actions taken to address protocol deficiencies found.

17. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Health and Safety (MESH) is identified as "original."

Section	Content
1-6	Original based on AIPP structure for protocols

Protocol 24A – Respiratory Protection

Section	Topic	Page

PennDOT is committed to reduce or eliminate the level of noise in the work environment from work tasks and/or equipment to safe levels through engineering controls, administrative controls and/or personal protective equipment.

1. Scope

This protocol applies to all PennDOT employees and work tasks or equipment that may result in the employee encountering excessive noise that could contribute to hearing loss. Where noise levels exceed (or have the potential to exceed) 95 decibels (dBA) over an 8-hour time-weighted average (TWA) the employee shall be included in the hearing conservation protocol.

UNDER DEVELOPMENT

Protocol 24B – Respirable Crystalline Silica Exposure

Section	Topic	Page

PennDOT is committed to reduce or eliminate the level of noise in the work environment from work tasks and/or equipment to safe levels through engineering controls, administrative controls and/or personal protective equipment.

1. Scope

This protocol applies to all PennDOT employees and work tasks or equipment that may result in the employee encountering excessive noise that could contribute to hearing loss. Where noise levels exceed (or have the potential to exceed) 95 decibels (dBA) over an 8-hour time-weighted average (TWA) the employee shall be included in the hearing conservation protocol.

UNDER DEVELOPMENT

Protocol 25 – Welding and Cutting (Hot Work)

Section	Topic	Page
1	Policy	P25 - 1
2	Scope	P25 - 1
3	Applicable Standards	P25 - 1
4	Definitions	P25 - 2
5	Roles and Responsibilities	P25 - 2
6	Types of Hot Work	P25 - 3
7	Shade Selection Chart	P25 - 6
8	Guidelines for Performing Hot Work Operations	P25 - 6
9	Special Precautions and Requirements	P25 - 8
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16	Recordkeeping	P25 - 12

1. Policy

This policy applies to all PennDOT employees and any contracted personnel performing hot work operations anywhere on or in close proximity to PennDOT facilities and job sites.

2. Scope

The purpose of a hot work protocol is to establish a method to prevent fires as a result of welding, soldering, grinding or any other spark producing activity, to ensure jobs are performed safely and consideration is given to ensuring the protection of employees and property. Only those employees who have been trained in how to perform hot work may be engaged in hot work operations.

3. Applicable Standards

- A. ANSI Z49.1, Safety in Welding and Cutting
- B. OSHA 29 CFR 1926.350-354, Welding and Cutting
- C. OSHA 29 CFR 1926.150-159, Fire Protection and Prevention
- D. OSHA 29 CFR 1910.101-104, 106, Compressed Gases, Acetylene, Hydrogen, Oxygen, Flammable Liquids
- E. NFPA 10, Standard for Portable Fire Extinguishers
- F. NFPA 51B, Fire Prevention During Welding, Cutting, and Other Hot Work

4. Definitions

- A. Acetylene: A colorless pungent smelling hydrocarbon gas, which burns with a bright flame, used in welding and formerly in lighting.
- B. Class I Electrically Classified Area: An area where electric equipment and wiring are classified depending on the properties of the flammable vapors, liquids or gases which may be present therein and the possibility that a combustible concentration or quantity is present.
- C. Designated Area: A specific location designated and approved for hot work operations that is maintained fire safe, such as a maintenance shop or detached outside location, that is of noncombustible or fire-resistive construction, essentially free of combustible and flammable contents and suitably segregated from adjacent areas.
- D. Flash Point: The temperature at which a particular organic compound gives off sufficient vapor to ignite in air.
- E. Hot Work: Any flame or spark producing operation. Examples may include, but are not limited to flame cutting, welding, brazing, flame soldering, grinding/cutting with any spark producing equipment, thermal spraying, pipe thawing, torch applied roofing or any other similar flame or spark producing operations.
- F. Permit-Required Area: Any location other than a designated area that is approved for hot work and is made fire safe by removing or protecting combustibles from ignition sources.
- G. Welding Blanket: A heat resistant fabric listed, approved, and designed to be placed in the vicinity of a hot work operation; intended for use in horizontal applications with light to moderate exposures such as that resulting from chipping, grinding, heat treating, sand blasting, and light horizontal welding; designed to protect machinery and prevent ignition of combustibles such as wood that are located adjacent to the underside of the blanket.
- H. Welding Curtain: A heat resistant fabric listed, approved, and designed to be placed in the vicinity of a hot work operation, intended for use in vertical applications with light to moderate exposures such as that resulting from chipping, grinding, heat treating, sand blasting, and light horizontal welding; designed to prevent sparks from escaping an area.

5. Roles and Responsibilities

- A. District Executives/Bureau Directors
 - (1) Direct the proper and timely implementation of this protocol.
 - (2) Support organizations and lower management with training resources as outlined in this protocol.
- B. Employee Safety and Training Division
 - (1) Provide oversight for protocol implementation.
 - (2) Coordinate training for field personnel on protocol requirements upon request.
 - (3) Evaluate the effectiveness of the hot work protocol on an annual basis.
- C. Managers/Supervisors
 - (1) Ensure implementation of protocol requirements.
 - (2) Sign and issue Hot Work Permit Form (P-70) after completion of inspection of work area.
 - (3) Provide employees with the required and appropriate personal protective equipment (PPE).
 - (4) Designate a fire watch when applicable.
 - (5) Submit completed Hot Work Permit Form (P-70) to district/county management for review.
 - (6) Provide timely follow up to employee concerns.
- D. Employees
 - (1) Follow the guidelines established in this protocol.
 - (2) Understand the precautions and hazards when performing hot work operations and the procedures to be used to control hazardous conditions.

- (3) Wear all required PPE.
- (4) Observe all requirements/safe work practices when conducting hot work operations.
- (5) Stop operations when job conditions change from when prior approval was granted.
- (6) Report any unsafe hot work conditions/acts immediately to a manager/supervisor.
- (7) Maintain good housekeeping during hot work operations.
- (8) Identify and/or barricade hot material where others may come into contact with it.
- (9) Ensure all of the requirements of the hot work permit are completed.

E. Qualified Fire Watch

- (1) A qualified fire watch will only be required in Non-Designated Areas as defined in Section 7B of the protocol.
- (2) Understand and be familiar with the hot work operation.
- (3) Ensure availability of a suitable fire extinguisher for the type and size of anticipated fire.
- (4) Ensure fire extinguisher training is up to date and completed.
- (5) Know the location of sounding alarms and evacuation routes.
- (6) Watch for fires in the assigned area.
- (7) Stop work activities that may be contributing to or causing fires.
- (8) Immediately extinguish a fire if observed.
- (9) Report any fire to the manager/supervisor immediately.
- (10) If combustibles are not present within 35 feet of the work area, remain at the area where hot work was performed for 60 minutes. After the initial 60 minutes, periodic monitoring every 30 minutes for the following three hours after completion of hot work is required.
- (11) Remain at the area where hot work was performed for 60 minutes. Periodic monitoring every 30 minutes for the following three hours after completion of hot work is required if combustibles are present within 35 feet of the work area.

6. Types of Hot Work

A. The following activities are examples of hot work:

- (1) Various types of arc welding (SMAW, GMAW, TIG) and Oxy/Fuel processes.
- (2) Any type of metal cutting using an Oxy/Fuel, Arc or Plasma cutting process.
- (3) Any spark producing activity such as grinding, cutting, sawing, etc.
- (4) Any open flame.

B. Welding

- (1) Gas - Oxy/Fuel.

a. PPE shall include:

- I. Welding uniform, leather work gloves along with appropriate welding attire made of cotton with long sleeves and preferably with a flame retardant treatment;
- II. Welding helmet or goggles (depending on operation) and must at a minimum meet the shade requirement listed from the shade selection chart.

NOTE: Auto darkening welding helmets are permitted for any welding operation as long as the shade number meets the minimum shade requirement in the shade selection chart for the operation being performed;

- III. Goggles;
- IV. Welding chaps may be required depending on the operation;
- V. Welding gloves (not regular leather gloves).

- b. Ensure tanks are shut off and hoses are drained when operations are completed when in designated welding areas. Disconnect all torches and shut down all cylinders when stopping hot work for 30 minutes or more when operations are conducted in non-designated welding locations.
- (2) Arc – Two metals are joined by an electric arc between an electrode and the base metal while adding filler material in the SMAW, GMAW or TIG welding processes.
- a. PPE shall include:
 - I. Auto darkening welding helmets or hand shield are permitted for any welding operation as long as the shade number meets the minimum shade requirement in the shade selection chart for the operation being performed; and
 - II. Welding chaps, jacket and welding gloves.
 - b. Ensure tanks are shut off and hoses are drained when operations are completed when in designated welding areas. Disconnect all electrodes and shut down the power source when stopping the hot work activity for 30 minutes or more when operations are conducted in non-designated welding locations.

C. Metal Cutting

- (1) Oxy/Fuel cutting – Metal is heated by a gas flame with oxygen jet doing the cutting. This is the most common method to cut metal.
- a. PPE shall include:
 - I. Cutting goggles or glasses that must at a minimum meet the shade requirement listed from the shade selection chart.
 - II. Welding gloves, welding jacket is recommended based upon the type of work activity. Welding chaps are mandatory.
 - b. Tank valves should be closed, and the gas supply completely shut down when leaving the area for more than 30 minutes when operations are conducted in non-designated welding locations.
 - c. Utilization of an employee's cigarette or lighter is prohibited to ignite an oxyacetylene torch.
- (2) Arc cutting and gouging – Electric arc creates heat in the metal, which starts to melt turning the metal into the molten state then a stream of pressurized air removes the molten metal.
- a. PPE shall include:
 - I. Welding helmet that must at a minimum meet the shade requirement listed from the shade selection chart; and
 - II. Welding gloves, welding chaps (depending on operation) and jacket.
 - b. Ensure tanks are shut off and hoses are drained when operations are completed when in designated welding areas. Disconnect all electrodes and shut down the power source when stopping the hot work activity for 30 minutes or more when operations are conducted in non-designated welding locations.

D. Brazing and Soldering

- (1) Brazing – With this process two metals are joined by heating the base or main metal to around 800°F then adding a filler material to bond the metal. The filler material is usually a silver based alloy.
- a. PPE shall include:
 - I. Safety goggles that must at a minimum meet the shade requirement listed from the shade selection chart;
 - II. Leather gloves; and
 - III. Proper work attire

- b. All tanks shall be closed, and cylinders shut off when stopping the hot work activity for 30 minutes or more when operations are conducted in non-designated welding locations.
- (2) Soldering – This process is very similar to brazing except the temperature needed to melt the filler material is much lower.
- a. PPE shall include:
 - I. Safety goggles or glasses that must at a minimum meet the shade requirement listed from the shade selection chart; and
 - II. Heavy leather gloves; and
 - III. Proper work attire
- E. Plasma Cutting
- (1) Plasma Cutting – An accelerated hot jet or hot plasma that cuts through electrically conductive materials.
- a. PPE shall include:
 - I. Welding helmet, the recommended shade of the hood will vary depending on the arc current that is being used; and
 - II. Welding chaps, jacket, auto darkening welding helmets, and welding gloves.
- F. Sawing
- (1) Sawing – When a powered machine, typically equipped with a blade having milled or ground teeth, is used to cutoff/part material or give it a new shape/band sawing.
- a. PPE shall include:
 - I. Safety goggles or glasses; and
 - II. Proper work attire.
- G. Grinding
- (1) Grinding – This process is a subset of cutting that uses a grinding wheel or grinder as the cutting tool.
- a. PPE shall include:
 - I. Safety goggles or glasses; and
 - II. Proper work attire.
- H. When necessary, welding drapes may be utilized to help prevent ambient light that may pose an additional hazard as long as the drapes are made of cotton and are nonflammable.
- I. Welding in Confined Spaces
- (1) Hot work activities in a confined space shall not be conducted without the approval of the manager/supervisor. A separate confined space entry permit shall be obtained when working in a permit-required confined space.
 - (2) Confined spaces shall be adequately ventilated with clean air to prevent the accumulation of toxic materials or possible oxygen deficiency during welding or cutting in confined spaces.
 - (3) In circumstances where it is impossible to provide such ventilation, an air supplied respirator shall be used with a properly calibrated air monitor to ensure adequate air quality.
 - (4) When welding or cutting is being performed in a confined space, welding machines and cylinders shall be left outside. Heavy portable equipment mounted on wheels shall be securely blocked to prevent accidental movement. All permit-required confined space procedures shall be followed if hot work is being performed in a confined space.
 - (5) Water based extinguishers shall be used when performing hot work in confined spaces.
- Reference Protocol 7 Confined Space Entry for additional information.

7. Shade Selection Chart

Welding Operation	Minimum Shade Number
Shielded metal-arc welding 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	10
Gas-shielded arc welding (nonferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	11
Gas-shielded arc welding (ferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	12
Shielded metal-arc welding 3/16-, 7/32-, 1/4-inch diameter electrodes	12
Shielded metal-arc welding, 5/16-, 3/8-inch diameter electrodes	14
Atomic hydrogen welding	10-14
Carbon-arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1-inch	3 or 4
Medium cutting, 1- to 6-inches	4 or 5
Heavy cutting, over 6-inches	5 or 6
Gas welding (light), up to 1/8-inch	4 or 5
Gas welding (medium), 1/8- to 1/2-inch	5 or 6
Gas welding (heavy) over 1/2-inch	6 or 8

8. Guidelines for Performing Hot Work Operations

A. Requirements for Designated Hot Work Operation Areas (Garages and Weld Shops):

- (1) Any area where hot work operations are performed shall meet or exceed the minimum ventilation requirements established in OSHA 29 CFR, Subpart Q, Welding, Cutting and Brazing as follows:
 - a. Fixed enclosures shall have an airflow away from the welder at least 100 linear feet per minute.
 - b. Sufficient exhaust shall be provided to prevent welders from inhaling fumes.
 - c. Oxygen cylinders/lines shall not be used for ventilation.
 - d. Mechanical ventilation shall be provided in a space of less than 10,000 cubic feet per welder and/or in a room with a ceiling height of less than 16 feet.
- (2) Areas shall be noncombustible construction:
 - a. Kept clear of combustibles for a radius of 35 feet.
 - b. Not allow the escape of sparks from the hot work operation.
- (3) Exception/alternative method when combustibles/flammables are within 35 feet in the designated hot work operation area:
 - a. Move the combustible material 35 feet or more away from the hot work operation.
 - b. Utilize an appropriate barrier such as a welding screen or fire blanket to completely enclose the containment of the combustible/flammable.
- (4) Flash arrestors shall be utilized, which provide stoppage of flames before they flash back into the gas line. Flash arrestors prevent the reverse flow of gases with built-in valves that protect the users and equipment from damage or explosions.

B. Requirements for Performing Hot Work in Non-designated Areas (Field Operations):

- (1) If hot work operations are to be performed in areas other than designated hot work operations areas, hot work permits are required (field operations). Prior to starting hot work operations, the manager/supervisor shall ensure that the following fire prevention and protection-related job prerequisites have been satisfied:
 - a. Hot work operation equipment to be used is in satisfactory operating condition and good repair.
 - b. Where combustible materials such as tall grass and wood products are in close proximity of the hot work operation, it is recommended to cover combustibles with a fire resistant barrier such as a fire blanket.
 - c. Combustible floors are wet, covered with damp sand, metal or protected by fire resistant shields/materials. Where floors have been wetted down, measures have been taken to keep them wet and to protect personnel operating arc welding or cutting equipment from possible shock.
 - d. Openings or cracks in walls, floors, open doorways, open or broken windows or ducts within 35 feet of the work area are covered to prevent the passage of sparks to adjacent areas.
 - e. Ducts and conveyor systems that might carry sparks to distant combustibles are suitably protected or shut down.
 - f. Inherently fire resistant materials have been placed beneath the job to collect sparks for projects that are elevated or above open grating, mezzanines, walkways, etc. such as bridge projects.
 - g. Where hot work operations are performed near walls, partitions, ceilings, or roofs constructed of combustible materials, fire resistant shields or guards shall be provided to prevent ignition.
 - h. If hot work operations are to be performed on metal walls, partitions, ceilings or roofs, requirements have been established to prevent ignition of combustibles on the other side, due to conduction or radiation (relocating combustibles is the preferred method.)
 - i. Fully charged and operable fire extinguishers, appropriate for the types of possible fires such as Class ABC or Class B, are staged with the fire watch at the jobsite. (Facility/area portable fire extinguishers shall not be relocated.)
 - j. Nearby employees are suitably protected against heat, sparks, slag, etc. For example, the use of welding screens or other barriers. Employees who are not needed for tasks pertaining to the hot work operation, it is recommended they should be instructed to keep away as a precaution.
 - k. Where sprinkler system protection exists, the system is operable (automatic sprinkler heads in the immediate vicinity of the hot work operations may be temporarily shielded with noncombustible sheet material or damp cloth guards, if necessary).
 - l. A qualified fire watch has been established at the job site.
- (2) Operations/Equipment exempt from issuance of a hot work permit include:
 - a. Heat lance/tar kettle – crack sealing operations
 - b. Paver that has a fuel heated screed or hot box
 - c. Heating on a CRAFCO buggy
 - d. Propane heater in a tack buggy
 - e. Heaters in asphalt distributors
- (3) Once these conditions have been satisfied, the manager/supervisor is authorized to issue hot work permits.

- C. During hot work performed outside of designated areas where the potential for flammable/combustible hazards may exist:
- (1) A copy of the permit shall be posted at the jobsite and the original maintained by the issuing manager/supervisor.
 - (2) The fire watch shall remain at the site of the hot work operation for the duration of the job.
 - (3) For hot work periods which exceed four hours, the area shall be inspected by the manager/supervisor at least once per shift to ensure the area continues to be fire safe.
- D. Upon completion of hot work:
- (1) The fire watch will begin when the last weld or cut is made.
 - (2) If no combustibles are located within 35 feet of the hot work operation, the fire watch shall remain at the jobsite for 30 minutes following completion of hot work.
 - (3) If combustibles are located within 35 feet of the hot work operation, the fire watch shall remain at the jobsite for 60 minutes for combustibles in which there is no barrier following the completion of hot work. Following the initial 60 minutes the fire watch or a designee with the ability to detect a fire and use a fire extinguisher or contact the agency emergency phone number, shall monitor the area where the hot work was performed approximately every 30 minutes for a period of three hours.
 - a. Alternative method would be to place a barrier such as a welding screen or fire blanket. The utilization of either of these methods will limit the use of a fire watch to the 30 minutes following the completion of hot work if the foreman/supervisor is able to ensure the material has been cooled to an appropriate temperature with a heat gun or digital thermometer.
 - (4) The expired or terminated permit shall be returned to the issuing manager/supervisor to keep it on file. Expired permits will be maintained for a period no less than three years.

9. Special Precautions and Requirements

- A. Hot work on systems that contain or contained combustible/flammable liquids
- Hot work in these circumstances can be very hazardous to the employee doing the work and to pedestrians or building occupants. For this reason, a manager/supervisor shall notify the ADE-M prior to conducting any hot work on combustible/flammable systems or containers. The following precautions shall be taken when welding or cutting on systems that contain or contained combustible/flammable liquids that have low flashpoints:
- (1) The part of the system being worked on shall be isolated from other areas of the system containing flammable liquids or vapors. Isolation may be accomplished by plugging (i.e., using approved procedures and equipment), blanking or disconnecting from the system. The isolated system shall be purged, ventilated, or cleaned before welding, cutting or brazing may be performed.
 - (2) Flash arrestors shall be utilized, which provide stoppage of flames before they flash back into the gas line. Flash arrestors prevent the reverse flow of gases with built-in valves that protect the users and equipment from damage or explosions.
 - (3) Before purging, written calculations shall be done to determine the time required to purge a certain size system with a given flow rate of an inert gas when applicable.
 - (4) After ventilating or cleaning a system, a lower explosive limit (LEL) reading shall be taken before the start of any hot work activity and every 15 minutes thereafter to ensure there are no residual flammable vapors. A reading of 10% or less of the LEL is acceptable.
 - (5) When a part of a system (i.e., a pipe) is worked on in place, protection shall be accomplished by a combination of purging and blanking off or cleaning and blanking off.
 - (6) A hot work permit issued under this protocol shall be completed and signed by the issuing manager/supervisor, employee conducting the hot work and their designated fire watch.

B. Hot Work Operations within Class I Electrically Classified Areas

- (1) Hot work within Class I electrically classified areas (see definition) shall not be performed unless the LEL is determined to be below 10% before beginning hot work operations.
- (2) The LEL shall be continuously monitored during hot work operations.
- (3) Hot work shall stop immediately upon any change in the LEL during operations.
- (4) Cameras, radios, cellular phones, flashlights and other such electronic devices shall not be permitted in any electrically classified areas unless the device is approved for use/operation in that area.

C. Hot Work Operations in Public Areas

The manager/supervisor and the employee conducting the hot work shall ensure the safety of pedestrians in public areas.

- (1) Pedestrians are protected from flying material like sparks and metal fragments.
- (2) Barriers are used to protect the public from flash and sparks during welding or acetylene cutting of metal.
- (3) Signs are used to warn pedestrians and other employees of the work hazards.
- (4) Other employees are warned of hot surfaces.
- (5) An emergency route is communicated and understood.
- (6) A first aid kit is readily available.

D. Hot work operations are prohibited in the following areas:

- (1) Where such operations have not been approved by the facility/area management.
- (2) If the fire sprinkler systems are impaired unless appropriate compensatory measures have been established.
- (3) Where the presence of explosive atmospheres (such as mixtures of flammable gases, vapors, liquids or dusts) exist.
- (4) Where potentially explosive atmospheres can develop such as inside unclean or improperly prepared drums, containers and equipment that contained such materials or with an accumulation of combustible dust inside ventilation ducts or hoppers.
- (5) Near the storage of large quantities of exposed, readily ignitable materials (such as cardboard storage containers, baled paper foam, plastic, combustible solid material) without proper precautions, such as noncombustible covers or atmospheric monitoring.
- (6) Where other personnel may come in contact with hot material resulting from hot work operations, the area shall be identified and/or barricaded (welding curtains should be used where practicable).

E. Compressed gas cylinders

- (1) Compressed gas cylinders can be hazardous even if the gas is not hazardous or flammable. The metal cap shall always be in place before the cylinder is moved, relocated, stored or transferred to another location.
- (2) All cylinders shall be secured upright at all times. Cylinders must not be placed in a location where they would be subject to open flame, hot metal, or other sources of artificial heat. If cylinders are not properly secured and fall over, it could cause serious harm/injury to those in the surrounding area.
- (3) Flammable and nonflammable cylinders shall not be stored together and shall be separated by a minimum of 20 feet or by a firewall rated at one hour. The firewall needs to be a minimum of 5 feet in height.
- (4) Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them. When this is impractical, fire resistant shields shall be provided.

F. Acetylene

- (1) Acetylene is a fuel gas composed of carbon and hydrogen. Manufactured by combining water and calcium carbide in a generating unit. Acetylene is an unstable gas under pressure greater than 15 PSI. Acetylene is a colorless, highly flammable gas that is slightly lighter than air. Acetylene is nontoxic but can be an asphyxiate. Acetylene will displace oxygen in high concentrations and could cause suffocation, especially since it is lighter than air (it rises in a room); for this reason, acetylene regulators should be leak checked on a routine basis.

G. Oxygen

- (1) A typical oxygen cylinder is made of steel and has a 220 cubic foot capacity at a pressure of 2,000 PSI. Oxygen supports and accelerates combustion of almost any material. Oxygen is very dangerous in the presence of oil and grease. If oil and grease are in the presence of oxygen, spontaneous combustion could occur.
- (2) Do not handle oxygen cylinders with oily or soiled hands or gloves.

H. Galvanized Steel

- (1) Welding on galvanized steel creates a zinc oxide hazard that can lead to metal fume fever if inhaled. The following precautions shall be taken when welding on galvanized steel.
- (2) The zinc coating is to be removed using chemical stripping methods in accordance with manufacturer specification, whenever feasible.
- (3) If the zinc coating cannot be removed prior to welding:
 - a. In designated hot work operation areas, exhaust ventilation must be in use and appropriately positioned to have an airflow of at least 100 linear feet per minute to prevent welders from inhaling fumes.
 - b. In non-designated areas (field operations), the welder shall be required to don respiratory protection while actively welding.

I. Signage

- (1) Visible hazard identification signs shall be provided when the hot work area is accessible by nonauthorized personnel such as the public. Signs shall be posted in all accessible locations to warn others that they are entering a hot work area. The sign shall read:

**CAUTION
HOT WORK IN PROGRESS
DO NOT ENTER**

10. Testing/Monitoring

- A. For hot work operations performed in Class I electrically classified areas defined in Section 8B, monitoring for LEL (flammables) shall be performed prior to and during hot work operations.
- B. LEL monitoring shall be acceptable for use in electrically classified areas and capable of initiating an audible alarm at a preset percentage of LEL.
- C. LEL monitoring equipment shall be calibrated per manufacturer's recommendations.
- D. For hot work operations within confined spaces, testing requirements under the permit required confined space protocol shall be followed. Refer to Protocol 7, Confined Space Entry for additional information.

11. Medical Surveillance

Employees that are engaged in welding operations 30 or more days in a year, shall have medical surveillance completed by a service provider. Additional testing may be required as directed by the physician upon completion of initial screening. Refer to Chapter G, Industrial Health for additional information.

- A. Annual Testing
 - (1) Blood Toluene
 - (2) Blood Chromium
 - (3) Blood Lead
 - (4) Blood Zinc Protoporphyrin
 - (5) Liver Function study
- B. Every 3 years
 - (1) Lateral and PA Chest X-Ray
 - (2) Pulmonary Function Test

12. Contractors

- A. Contractors performing such operations shall be informed of the requirements of this protocol and OSHA requirements prior to initiating hot work operations.
- B. Contractors shall provide a fire watch who meets the criteria established in this protocol.
- C. All equipment purchased, including fire extinguishers, shall be the property of the contractor unless approved by the District Executive by the contractor.

13. Training

- A. Initial
 - (1) All employees shall receive initial training on the recognition of when hot work permits are to be completed.
 - (2) Employees with roles and responsibilities identified in this protocol shall review the protocol to ensure they understand the policy and their respective role and responsibilities.
- B. Refresher
 - (1) The initial training requirements outlined above shall be repeated every three years.

14. Documentation

- A. General
 - (1) Hot work permits identify the necessary fire prevention and protection prerequisites to be followed while hot work operations are in progress and document review and approval of the operations to be performed.
 - (2) The Hot Work Permit Form (P-70) shall be completed for all hot work operations outside the designated hot work areas.
 - (3) Hot work permits are not to exceed a period of one shift (24 hour maximum).
 - (4) The following completed documents shall be kept at the district/county offices for three years.
 - a. District/county office – Completed Hot Work Permits Form (P-70)
 - b. District/county office – Atmospheric monitoring records
 - c. District office/LSO – Training records

B. Description

- (1) Hot work permits are available from district/county management and are located in the maintenance garages and county offices. Each permit consists of the original paper (issuing manager/supervisor) and a copy (posted at the work area). A permit number is provided on the right edge of each permit.

C. Instruction

- (1) All entries shall be typed or handwritten in ink by the issuing manager/supervisor. Only managers/supervisors are allowed to issue hot work permits. A necessary correction shall be made by drawing a single line through the error, adding the correct entry and initialing the change.

D. Disposal

- (1) Upon termination of the hot work operations, the permit shall be returned to the issuing manager/supervisor for recordkeeping purposes.

15. Program Review

The effectiveness of this protocol in preventing workplace hazards, injuries and illnesses will be evaluated annually by the Employee Safety and Training Division with the appropriate actions taken to address protocol deficiencies found.

16. Recordkeeping

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original."

Section	Content
1-15	Original based on AIPP structure for protocols

Protocol 26 – Scaffolding

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1. Policy

The purpose of this protocol is to protect employees from the hazards associated with falls from scaffolds.

2. Scope

This protocol applies to all PennDOT employees who, while performing their duties, may erect, dismantle and/or are required to use scaffolding for various job tasks.

3. Applicable Standards

- A. OSHA 1926, Subpart L, Scaffolds
- B. OSHA 1910.28, Duty to Have Fall Protection and Falling Object Protection
- C. OSHA 1910.29, Fall Protection Systems and Falling Object Protection – Criteria and Practices
- D. OSHA 1926.106, Working Over or Near Water

4. Definitions

- A. Adjustable Suspension Scaffold: A suspension scaffold equipped with a hoist(s) that can be operated by an employee(s) on the scaffold.

- B. Bearer (putlog): A horizontal transverse scaffold member (which may be supported by ledgers or runners) upon which the scaffold platform rests and which joins scaffold uprights, posts, poles and similar members.
- C. Body Harness: A design of straps which may be secured about the employee in a manner to distribute the fall arrest forces over at least the thighs, pelvis, chest and shoulders with means for attaching it to other components of a personal fall arrest system.
- D. Brace: A rigid connection that holds on scaffold member in a fixed position with respect to another member or to a building or structure.
- E. Cleat: A structural block used at the end of a platform to prevent the platform from slipping off its supports. Cleats are also used to provide footing on sloped surfaces such as crawling boards.
- F. Competent Person: One is who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.
- G. Continuous Run Scaffold (Run Scaffold): A two point or multipoint adjustable suspension scaffold constructed using a series of interconnected braced scaffold members or supporting structures erected to form a continuous scaffold.
- H. Coupler: A device for locking together the tubes of a tube and coupler scaffold.
- I. Deceleration Device: Any mechanism, such as a rope grab, rip stitch lanyard, specially woven lanyard, tearing or deforming lanyard or automatic self-retracting lifeline lanyard, which dissipates a substantial amount of energy during a fall arrest or limits the energy imposed on an employee during fall arrest.
- J. Double Pole (Independent Pole) Scaffold: A supported scaffold consisting of a platform(s) resting on cross beams (bearers) supported by ledgers and a double row of uprights independent of support (except ties, guys, braces) from any structure.
- K. Fabricated Decking and Planking: Manufactured platforms made of wood (including laminated wood and solid sawn wood planks), metal or other materials.
- L. Fabricated Frame Scaffold (Tubular Welded Frame Scaffold): A scaffold consisting of a platform(s) supported on fabricated end frames with integral posts, horizontal bearers and intermediate members.
- M. Form Work: A supported scaffold consisting of a platform supported by brackets attached to form work.
- N. Guardrail System: A vertical barrier, consisting of, but not limited to, top rails, midrails and posts, erected to prevent employees from falling off a scaffold platform or walkway to lower levels.
- O. Guy (Guy Wire): A tension cable or wire designed to add stability to a freestanding scaffold used to attach the scaffold either to the ground or to a structure.
- P. Hoist: A manual or power operated mechanical device to raise or lower a suspended scaffold.
- Q. Landing: A platform at the end of a flight of stairs.
- R. Lifeline: A component consisting of a flexible line that connects to an anchorage at one end to hand vertically (vertical lifeline) or that connects to anchorages at both ends to stretch horizontally (horizontal lifeline) and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.
- S. Masons' Multiple Point Adjustable Suspension Scaffold: A continuous run suspension scaffold designed and used for masonry operations.
- T. Maximum Intended Load: The total of all persons, equipment, tools, materials, transmitted loads and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.
- U. Mobile Scaffold: A powered or unpowered, portable, caster or wheel mounted supported scaffold.
- V. Multiple Point Adjustable Suspension Scaffold: A suspension scaffold consisting of a platform(s) which is suspended by more than two ropes from overhead supports and equipped with means to raise and lower the platform to desired work levels. Such scaffolds include chimney hoists.

- W. Open Sides and Ends: The edges of a platform that are more than 14 inches away horizontally from a sturdy, continuous, vertical surface (such as a building wall) or a sturdy, continuous horizontal surface (such as a floor) or point of access.
- X. Outrigger: The structural member of a supported scaffold used to increase the base width of a scaffold in order to provide support for and increased stability of the scaffold.
- Y. Outrigger Scaffold: A supported scaffold consisting of a platform resting on outrigger beams (thrust outs) projecting beyond the wall or face of the building or structure, the inboard ends of which are secured inside the building or structure.
- Z. Personal Fall Arrest System: A system used to arrest an employee's fall. It consists of an anchorage, connectors, and body harness and may include a lanyard deceleration device, lifeline or combinations of these.
- AA. Platform: A work surface elevated above lower levels. Platforms can be constructed using individual wood planks, fabricated planks, fabricated decks and fabricated platforms.
- BB. Pump Jack Scaffold: A supported scaffold consisting of a platform supported by vertical poles and movable support brackets.
- CC. Qualified: One who, by possession of a recognized degree, certificate, professional standing or who by extensive knowledge, training and experience demonstrated their ability to solve or resolve problems related to the subject matter, the work or the project.
- DD. Rated Load: The manufacturer's specified maximum load to be lifted by a hoist or to be applied to a scaffold or scaffold component.
- EE. Runner (Ledger or Ribbon): The lengthwise horizontal spacing or bracing member which may support the bearers.
- FF. Scaffold: Any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting employees or materials or both.
- GG. Scaffolding Erector: A qualified individual responsible for installing scaffolding and performing an inspection prior to initial use.
- HH. Single Point Adjustable Suspension Scaffold: A suspension scaffold consisting of a platform suspended by one rope from an overhead support and equipped with means to permit the movement of the platform to desired work levels.
- II. Single Pole Scaffold: A supported scaffold consisting of a platform(s) resting on bearers, the outside ends of which are supported on runners secured to a single row of posts or uprights, and the inner ends of which are supported on or in a structure or building wall.
- JJ. Stair Tower (Scaffold Stairway/Tower): A tower comprised of scaffold components, and which contains internal stairway units and rest platforms. These towers are used to provide access to scaffold platforms and other elevated points such as floors and roofs.
- KK. Supported Scaffold: One or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames or similar rigid support.
- LL. Suspension Scaffold: One or more platforms suspended by ropes or other nonrigid means from an overhead structure(s).
- MM. System Scaffold: A scaffold consisting of posts with fixed connect points that accept runners, that can be interconnected at predetermined levels.
- NN. Tube and Coupler Scaffold: A supported or suspended scaffold consisting of a platform(s) supported by tubing, erected with coupling devices connecting uprights, braces, bearers and runners.
- OO. Two Point Suspension Scaffold (Swing Stage): A suspension scaffold consisting of a platform supported by hangers (stirrups) suspended by two ropes from overhead supports and equipped with means to permit the raising or lowering of the platform to desired work levels.
- PP. Unstable Objects: Items whose strength, configuration or lack of stability may allow them to become dislocated and shift and therefore may not properly support the loads imposed on them. Unstable objects do not constitute a safe base support for scaffolds, platforms or employees. Examples include, but are not limited to barrels, boxes, loose brick and concrete blocks.

QQ. Walkway: A portion of a scaffold platform used only for access and not as a work level.

5. Roles and Responsibilities

A. Bureau Directors/District Executives

- (1) Ensure the proper implementation of this protocol in accordance with PennDOT procedures.
- (2) Provide appropriate materials and resources to ensure PennDOT employees working on scaffolding can do so safely.
- (3) Provide for the timely and effective training of PennDOT employees that utilize, erect or dismantle scaffolding.

B. Employee Safety and Training Division

- (1) Provide technical guidance regarding work with scaffolds, proper selection of scaffolding and personal protective equipment.
- (2) Report any employee concerns to a manager/supervisor immediately.
- (3) Correct any unsafe practices or conditions immediately.
- (4) Provide timely follow up to employee concerns.
- (5) Retain and maintain protocol documentation.
- (6) Investigate and document all near misses and incidents that result in employee injury.
- (7) Assist supervisors by coordinating training as set forth in this protocol.
- (8) Ensure the overall protocol effectiveness is evaluated annually.

C. Managers/Supervisors

- (1) Conduct prejob planning to ensure the hazards related to scaffolding are identified and addressed prior to the beginning of work.
- (2) Ensure the proper engineering controls, administrative controls and personal protective equipment are available to reduce employee injuries.
- (3) Identify and/or serve as the competent person.

D. Competent Persons

- (1) Ensure that all employees required to erect and/or use scaffolding have received appropriate level of training.
- (2) Ensure all employees attend required training in regards to this protocol.
- (3) Provide necessary personal protective equipment.
- (4) Ensure that all employees perform their assigned duties as outlined in this protocol.
- (5) Take appropriate action whenever an employee fails to follow safety precautions outlined in this protocol.
- (6) Coordinate with contractors to ensure proper procedures are being followed per this protocol.
- (7) Complete scaffold tags and scaffold inspection checklist accordingly. Forward completed scaffold tags and scaffold inspection checklist to the appropriate District Safety Coordinator.

E. Employees

- (1) Understand and adhere to the procedures outline in this scaffold protocol.
- (2) Report any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees.
- (3) Inspect each scaffold before each shift and report any defects or concerns immediately.
- (4) Use any required personal fall protection according to training received.

- (5) Never attempt to alter or repair any scaffold without proper training and authorization.
- (6) Scaffolding erectors are responsible for installing scaffolding and performing inspections prior to initial use and after any occurrence which may affect the structural integrity of the scaffold.

6. General Requirements

- A. All scaffolds shall be designed by a qualified person or manufacturer and shall be erected, loaded and used in accordance with that design or manufacturer's specifications.
- B. Scaffolds shall only be erected, altered, moved or dismantled by trained scaffold erectors.
- C. Employees required to perform work on scaffold platforms shall be trained in the recognition and control measures for the hazards associated with the type(s) of scaffold being used.
- D. Scaffolds shall be capable of supporting, without failure, its own weight and at least four times the maximum intended load.
- E. Scaffolds with work platforms of six feet or more above the ground or next lower level shall have a complete guardrail system or approved personal fall protection. Toe boards are required when there is a risk of material, tools, or equipment being incidentally kicked, bumped or otherwise dislodged off the scaffold deck onto personnel below.
- F. Work activities when employees are working four feet or more above water requires the use of all protection to eliminate drowning hazards.
- G. All scaffold work platforms shall be completely decked between the uprights and/or guardrail supports.
- H. Scaffold platforms shall be a minimum of 18 inches wide.
- I. All scaffold decking shall be scaffold grade or equivalent. Under no circumstances shall other equipment or material be utilized.
- J. The footing or anchorage for all scaffolds shall be sound, rigid and capable of supporting the loaded scaffold without settling or displacement. Unstable objects such as barrels, boxes, loose bricks or concrete blocks will not be used to support scaffolds. Mudsills 8 inches X 8 inches and base plates are required when scaffolds are supported on the ground surface. When using leveling jacks, $\frac{3}{4}$ of the mudsill's length shall remain inside the scaffold leg.
- K. The poles, legs or uprights of scaffolds shall be plumb and securely braced to prevent swaying and displacement.
- L. Manufactured scaffold components shall not be modified. Scaffold components manufactured by different manufacturers or of dissimilar metals shall not be intermixed unless the components fit together without force, modification and the scaffolds structural integrity is maintained as determined by a competent person.
- M. Supported scaffolds with a height-to-base width ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing or equivalent means.
 - (1) Guys, ties and braces shall be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the four to one (4:1) height and be repeated vertically at locations of horizontal members every 20 feet or less for scaffolds three feet wide or less; every 26 feet or less thereafter for scaffolds greater than three feet wide.
 - (2) The top guy, tie or brace of completed scaffolds shall be placed no further than four to one (4:1) height from the top. Such guys, ties and braces shall be installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet.
- N. Design drawings shall be made prior to erection and kept on site for any scaffold over 125 feet high. They shall be made by a licensed professional engineer competent in this field.

7. Scaffold Erection

- A. Prior to beginning any work, the barricading of erection area (using danger or caution tape) and signage (employees working above) needs to be in place to ensure the safety of employees below, should any components fall from height during erection.
- B. Once the base of the scaffold has been erected, immediately install:
 - (1) A platform at least 18 inches wide along the full length of the section of scaffolding.
 - (2) Edge protection across the space between the uprights forming the outer frame of the scaffolding at the level the scaffolding has reached.
 - (3) A means of access (for example, temporary stairs or a ladder) to the level the scaffolding has reached.
- C. Before the next level of the scaffolding is erected, a platform shall be installed below the level at a distance of not more than six feet.
- D. A section of the platform may be left open to allow the passing of planks or other scaffolding components between levels.
- E. A platform does not need to be installed on the bottom level of the scaffolding.
- F. A platform may be removed after work has started two levels above the level from which the platform is to be removed.
- G. Mudsills shall be level and some digging may be required to obtain a level surface.
- H. No part of the baseplate or adjustable base shall protrude over the side of the mudsill to ensure the loads are imposed evenly on the sole board.
- I. If using plywood sheets to cover gaps between scaffold planks the plywood sheets shall be:
 - (1) A minimum of 5/8 inch thick.
 - (2) Only used to cover gaps less than 18 inches wide (unless approved by an engineer).
 - (3) Secured to prevent movement.

8. Access to Scaffold Platforms

- A. When scaffold platforms are more than two feet above or below a point of access, an attached ladder or other approved ladder/stair system shall be used by scaffold users to reach the platform.
- B. On supported scaffolds over 20 feet high, use stairs instead of ladders to access the scaffold.
- C. Hook-on and attachable ladders shall be positioned so that their bottom rung is not more than 24 inches above the scaffold supporting level.
- D. Access ladders shall extend 36 inches above the platform being accessed or equivalent safe access shall be provided.
- E. Scaffold bracing shall not be used for access or climbing. Integral prefabricated scaffold access frames shall be specifically designed and constructed for use as ladder rungs and may be used for access to platforms.
- F. Hook-on and attachable ladders shall be broken with rest platforms at 35 foot maximum vertical intervals.
- G. Hook-on and attachable ladders shall be specifically designed for use with the type of scaffold being used.
- H. Rungs shall be uniformly sized and spaced with a maximum interval between rungs of 16 ¾ inches.
- I. Rungs shall be at least 11 ½ inches long.

9. Scaffold Use

- A. Scaffolds shall not be loaded in excess of their maximum intended loads or rated capacities.
- B. Debris shall not be allowed to accumulate on platforms.
- C. Do not stack brick, tile, block or similar material higher than 24 inches on the scaffold deck.
- D. Makeshift devices, such as boxes and barrels shall not be used on top of scaffold platforms to increase the working level height.
- E. Ladders shall not be used to increase the working level height.
- F. Where swinging loads are being hoisted onto or near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads shall be used.
- G. Scaffolds shall never be altered or moved while they are in use or occupied.
- H. Scaffolds shall not be moved or dismantled without first removing all loose tools, materials and equipment resting on the scaffold deck.
- I. Employees shall not work on scaffolds during storms or high winds.
- J. Employees shall not work on scaffolds which are covered with ice or snow, unless involved in removing ice or snow from scaffold.
- K. The clearance between scaffolds and power lines shall be as follows: Scaffolds shall not be erected, used, dismantled, altered or moved such that they or any conductive material handled on them might get closer to exposed and energized lines than as follows:

Insulated Line Voltage	Minimum Distance	Alternatives
Less than 300 volts (v)	3 Feet	Two times the length of the line insulator, but never less than 10 feet
300 to 50kV	10 Feet	
More than 50 kV	10 feet plus general rule: 0.4 inches for each 1kV over 50kV	
Uninsulated Line Voltage	Minimum Distance	Alternatives
Less than 50kV	10 feet	Two times the length of the line insulator, but never less than 10 feet
More than 50kV	10 feet plus general rule: 0.4 inches for each 1kV over 50kV	

EXCEPTION: Scaffolds and materials may be closer to power lines than specified where such clearance is necessary for performance of work and only after the utility company or electrical system operator has de-energized or relocated the lines.

10. Falling Object Protection

- A. Additional protection from falling hand tools, materials, debris and other small objects through the installation of toe boards, barricades, mesh/screens, debris nets or catch platforms/canopies shall be provided as warranted.
- B. Where there is a hazard of tools, materials or small objects falling from the surface of scaffold platforms and striking pedestrians below, the area below the scaffold to which objects can fall shall:
 - (1) Be barricaded at an appropriate distance with tape identifying the area a "Hazard Area". Where the job is in short duration, a second employee stationed on the ground directing individuals away from the hazard can serve as an acceptable alternative.
 - (2) Have a two inch X four inch (nominal) toe board erected along all edges of scaffold platforms more than 10 feet above lower levels.

- (3) Where tools and materials are stacked above the height of the toe board, the following additional protective measures should be considered:
 - a. Higher toe boards, or
 - b. Mesh/screen put up against the guardrail with openings small enough to contain materials on the platform.
- (4) In some cases, due to the nature or configuration of the scaffold/work area, debris nets, catch platforms or canopy structures may be erected to protect pedestrians from falling objects, rather than the protective mechanisms listed above.
 - a. If used these structures shall be strong enough to withstand the impact forces of the potential falling objects and shall be erected over the pedestrians below.
- (5) When potential falling objects are too large, heavy or massive to be contained by any of the above listed measures, those materials shall be placed away from edges and further secured from falling.

11. Mobile (Rolling) Scaffolds

- A. Mobile scaffolds shall be used only on level, smooth surfaces free of major defects.
- B. Mobile scaffolds shall be braced by cross, horizontal or diagonal braces or a combination thereof, to prevent racking or collapse of the scaffold and to ensure scaffolds remain plumb, level and squared at all times. All brace connections shall be secured.
- C. Outrigger frames, when used, are installed on both sides of the scaffold and would be included in the base/height limit calculations.
- D. No one is to ride on any part of a scaffold that is being moved.
- E. All casters used with mobile scaffolding shall be provided with a positive locking device to hold the scaffold in position when the scaffold is stationary or while employees are on the scaffold.
- F. Caster stems and wheel stems shall be pinned or otherwise secured in scaffold legs or adjustment screws.
- G. Manual force used to propel the scaffold shall be applied as close to the base as possible and never more than five feet above the supporting surface.
- H. Power systems used to propel mobile scaffolds shall be designed for such use. Forklifts, trucks or other similar motorized vehicles shall not be used to move scaffolds, unless the scaffold is specifically designed to be moved in this manner.
- I. All Fall Prevention and Protection equipment shall comply with Protocol 15, Fall Prevention and Protection, Section 8.H.

12. Fall Prevention and Fall Protection

Each employee on a scaffold six feet or higher above the ground or next lower level shall be protected from falling to that lower level by means of a complete guardrail system (fall prevention) or approved personal fall protection. This requirement applies to both scaffold users and scaffold erectors/dismantles.

A. Fall Prevention

- (1) All scaffold guardrail systems shall meet the design/performance requirements set forth in this section and other applicable standards.
- (2) Guardrail systems shall be installed along all open sides and ends of platforms.
- (3) Guardrail systems shall be completely installed before the scaffold is released for use other than erection and dismantling crews.

- (4) Guardrail systems shall be surfaced to prevent injury to employees such as punctures or lacerations.
- (5) Top edge height of top rails or equivalent member shall be installed between 39 inches and 45 inches.
- (6) Each top rail or equivalent member shall be capable of withstanding, without failure, a force applied in any downward or outward direction of at least 200 pounds.
- (7) Midrails shall be installed at a height approximately midway between the top edge of the guardrail system and the platform surface. When intermediate members are used as a midrail, they shall not be more than 19 inches apart.
- (8) Each midrail or equivalent member shall be capable of withstanding, without failure, a force applied in any downward or outward direction of at least 150 pounds.
- (9) Where guardrail systems are incomplete, missing or moved to allow access for work, personal fall protection shall be used on the affected platform(s).
- (10) In some cases, a building, structure, equipment or piping may prevent the proper installation of a complete scaffold guardrail, a competent person can determine whether these obstructions meet or exceed the applicable guardrail requirements; to be used instead of the scaffold guardrail system. The competent person shall use the scaffold tag to indicate when these conditions are acceptable.

B. Personal Fall Arrest System

- (1) Approved personal fall protection is required any time employees work on or erect a scaffold unless the competent person determines it is infeasible or creates a greater hazard:
 - a. Which is not protected by a complete deck and guardrails, and 10 feet or more above the ground or next lower level.
 - b. Anytime on a suspended scaffold platform.
 - c. Working as stated above, means traveling, stationary or at any time exposed to a fall hazard.
- (2) Personal fall protection used on scaffolds shall be attached by a lanyard to a vertical lifeline, horizontal lifeline or approved scaffold structural member.
- (3) Personal fall protection is not required while using a designed ladder or access system, provided "three points of contact" are maintained when ascending or descending a scaffold ladder (access way) and the requirements of this protocol and applicable standards for ladders and stairways are met.
- (4) Employees shall keep three points of contact while climbing ladders. Tools and materials may be carried on their body, hoisted up/down by rope or other devices.

C. Refer to Protocol 15, Fall Prevention and Protection for additional information.

13. Scaffold Dismantling

- A. Prior to beginning any work, the barricading of dismantling area (using danger or caution tape) and signage (employees working above) needs to be in place to ensure the safety of employees should any components fall from height during construction.
- B. Edge protection and any means of access can be removed as the scaffolding is dismantled, provided it is removed at the last possible stage.
- C. A platform of at least 18 inches wide, at the level the dismantling has reached.
- D. Ensure that when dismantling scaffold, the platform immediately below the level the employee is standing on, has a full set of planks across its width and is no lower than six feet.
- E. A section of the scaffold may be left open to allow the lowering of planks or other scaffolding components between levels.

14. Equipment Inspection/Tagging

A. Inspection Frequency

- (1) Prior to being put into service, the scaffolding will be inspected by the scaffold erector and a tag will be placed on the scaffold to indicate it was inspected and its condition.
- (2) Scaffold alterations shall only be conducted by trained scaffold erectors.
- (3) Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity.
- (4) The crew that erects the scaffold will complete and attach the scaffold tag.
- (5) The tag shall be placed at eye level on or near the access ladder, so it is easy to locate and plainly visible.
- (6) An untagged scaffold shall not be used.
- (7) The scaffold should be inspected at least once a week by a scaffold erector.

B. Equipment Inspection (Form P-66, Scaffold Inspection Checklist)

- (1) The ground surface capable of supporting the loads to be placed on it.
- (2) Base plates have been installed.
- (3) Mudsill or pads needed, if so, have they been installed.
- (4) The scaffold is level.
- (5) The scaffold height is right for the job.
- (6) Coupling pins, rivet and hairs pins, etc. have been installed as required.
- (7) Poles, legs or uprights and diagonal bracing have been installed as required and properly attached.
- (8) Scaffold components are straight and free of bends, kinks, dents or severe rusting.
- (9) Weld zones are free from cracks.
- (10) The scaffold is plumb and securely and rigidly braced to prevent swaying and displacement.
- (11) Guardrails, midrails and toe boards are installed on all open sides and ends of work platform levels.
- (12) The floors of these platform levels have been completely planked with no space between boards.
- (13) The toe boards and scaffold planks have been tied down and secured.
- (14) All planking is scaffold grade with no visible splits or holes.
- (15) The planks have the proper overlap, or have they been properly cleated.
- (16) An access ladder has been provided.
- (17) The ladder is properly secured, and does it extend above the work platform level.
- (18) Falling object protection has been installed if employees are to work under the scaffolding.
- (19) All other aspects of the scaffold are in compliance with PennDOT policy and applicable laws and regulations.
- (20) Casters, if used, are free turning, free acting swivel and the locking mechanisms are in good working order.

C. Three types of tags shall be used by PennDOT employees.

- (1) Scaffold Fully Released for Access Tag (Green) The Scaffold Fully Released for Access Tag will be installed on the entry side of the scaffold when the competent person has completed the checklist and all items meet the requirements. The tag shall have the name of the person who inspected and approved the scaffold and date and time.

- (2) Caution Scaffold Access Tag (Yellow) - Can be used if hazards are compensated for. This tag indicates that there are some problems, but if you develop a procedure to be used that will control the hazard, you can use the scaffold.
- (3) STOP Scaffold Not Ready for Access Tag (Red) Scaffold Not Ready for Access Tag: Shall be installed on the entry side, and the scaffold shall be barricaded until the unsafe equipment or condition no longer exists. A competent person will sign the tag.
 - a. The competent person shall inspect the scaffold per the Scaffold Approval Inspection Checklist Form P-66 and any item that does not meet the requirement shall be corrected prior to use. If the equipment or condition cannot be corrected, then a STOP Scaffold Not Ready for Access Tag shall be installed.
 - b. The following conditions shall require a STOP Scaffold Not Ready for Access Tag immediately:
 - I. High wind or storms
 - II. Snow or ice on platform
 - III. The scaffold is no longer plumb
 - IV. Hazardous atmosphere
- (4) Prior to any work on a scaffold, a Scaffold Fully Released for Access Tag shall be in place and signed by a competent person. Any employee who violates the STOP TAG or does not correct hazards will be subject to disciplinary action.
- (5) Examples of the scaffolding tags are located in Appendix A of this protocol and are not permitted to be printed off and used as a tag. The scaffolding tags must be ordered through PAAuthorizer or requested from the Employee Safety and Training Division to be considered a certified scaffolding tag.

15. Contractors/Consultants

A. Maintenance and Bridge

- (1) Contractors/consultants used by Maintenance and Bridge to conduct work using scaffolds shall be informed in advance of potential hazards associated with the area, if known.

B. Construction

- (1) If construction employees will be working on scaffolds with contractor employees, the contractors shall be responsible for ensuring the evaluation and controls of hazards. Construction employees shall be provided information regarding the scaffold from the contractors and will be informed/trained by the contractor on the hazards.

16. Training

A. Scaffold Erectors

- (1) Training requirements apply to all employees who are involved in erecting, altering, disassembling, moving, repairing or inspecting scaffolds.
- (2) Training shall be performed by a qualified person.
- (3) The training shall include the following topics as applicable:
 - a. The nature of scaffold hazards.
 - b. The correct procedures for erecting, altering, disassembling, moving, repairing and inspecting, the type(s) of scaffold intended to be utilized.
 - c. The design requirements, as well as the maximum intended load carrying capacity and intended use of the scaffold.
 - d. The proper use of personal fall protection equipment and fall protection systems.

B. Scaffolding Users - General Awareness (78SAFE000030); Competent Person (78SAFE000029)

- (1) Training requirements apply to all employees who perform work while on a scaffold.
- (2) Scaffold user training shall be performed by a qualified person.
- (3) The training shall include the following topics as applicable:
 - a. The proper use of the scaffold and the proper handling of materials on the scaffold.
 - b. The maximum intended load and load carrying capacities of the scaffolds used.
 - c. The nature of any overhead working/falling objects, personal fall protection and electrical hazards in the work area.
 - d. The correct procedures for dealing with electrical hazards.
 - e. The proper use of personal fall protection and fall protection systems.
 - f. The overhead work/falling object protection systems being used.
 - g. The requirements of this protocol.

C. Refresher Training

- (1) Retraining for both scaffold erectors and scaffold users is required when:
 - a. When the annual review of the protocol indicates there have been substantial changes to this protocol.
 - b. There are changes in the types of scaffolds, fall protection, falling object protection or other equipment or procedures related to the hazards associated with site scaffolding.
 - c. Changes in the worksite that could present new hazards to which the employee has not been previously trained.
 - d. Retraining shall be conducted every two to three years for scaffold users.
 - e. Retraining shall be conducted when an employee demonstrates a lack of skill, understanding or where inadequacies in an affected employees work involving scaffolds indicates that the employee has not retained proficiency.

17. Program Review

The effectiveness of this protocol in preventing workplace hazards, injuries and illnesses will be evaluated annually by the Employee Safety and Training Division with the appropriate actions taken to address protocol deficiencies found.

18. Recordkeeping


Written training records for each employee detailing training received and the date received will be kept on file for the current and three previous fiscal years by the Employee Safety and Training Division.

Inspection tags and Scaffold Inspection Tags will be kept by the Engineering Division for 30 days from the end of the project for review upon request.

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in Pub 445M, Manual for Employee Health and Safety (MESH) is identified as “original.”

Section	Content
1-18	Original based on AIPP structure for protocols

Appendix A



OK

The scaffold was built to meet safety regulations

IT IS SAFE TO USE


Scaffolds and scaffold components shall be inspected by a competent person for visible defects before each work shift, and after any occurrence which could affect a scaffold's structural integrity.

If the scaffold is safe to use, you must fill out the chart below with your initials and date of inspection (month/day/year).


PRINT NAME (Competent Person)	INITIALS	DATE INSPECTED

Location: _____

PUB 445M, Protocol 26



Front Side



OK

Back Side

SCAFFOLD FULLY RELEASED FOR ACCESS TAG

The green scaffolding tags must be ordered through PAPublisher or requested from the Employee Safety and Training Division to be considered a certified scaffolding tag.

CAUTION

**SCAFFOLD CAN BE USED IF
HAZARDS ARE COMPENSATED**

Date: _____

Reasons: _____


Limitations: _____

Authorized Signature (Competent Person)

Print Name

Location: _____

PUB 445M, Protocol 26



Front Side

CAUTION

Back Side

CAUTION SCAFFOLD ACCESS TAG

The yellow scaffolding tags must be ordered through PAPublisher or requested from the Employee Safety and Training Division to be considered a certified scaffolding tag.

STOP

**SCAFFOLD NOT
READY FOR ACCESS**

Date: _____

Reason: _____

Estimated Completion Date: _____

Authorized Signature (Competent Person)

Print Name

Location: _____

PUB 445M, Protocol 26



Front Side



Back Side

STOP SCAFFOLD NOT READY FOR ACCESS TAG

The red scaffolding tags must be ordered through PAPublisher or requested from the Employee Safety and Training Division to be considered a certified scaffolding tag.

Protocol 27 – Radiation Safety

Section	Topic	Page
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1. Policy

PennDOT is committed to ensuring that the hazards associated with ionizing and nonionizing radiation have been adequately and appropriately addressed. The protocol provides PennDOT employees with the basic information for assuring a safe workplace from recognized hazards which may cause occupational illness or injuries.

2. Scope

This protocol affects all PennDOT employees and contractors who utilize, calibrate or administer ionizing and nonionizing radiation emitting instrumentation in the Materials Testing Laboratory or department personnel in the field that are trained on the equipment. Instrumentation includes but is not limited to x-ray fluorescence (XRF), x-ray diffractometer (XRD) and soil moisture/density nuclear gauges.

3. Applicable Standards

- A. United States Department of Transportation (DOT), Title 49
- B. Nuclear Regulatory Commission (NRC), Title 10
- C. Occupational Safety and Health Administration (OSHA), 29 CFR 1910.1096 Ionizing Radiation
- D. Occupational Safety and Health Administration, 29 CFR 1926.54 Nonionizing Radiation
- E. Pennsylvania Department of Environmental Protection (DEP), Title 25. Rules and Regulations, Article V. Radiological Health
- F. Pennsylvania Emergency Management Agency (PEMA), Radiation Protection Act of July 10, 1984

4. Definitions

- A. As Low as Reasonably Achievable (ALARA): Making every effort to keep exposures as low as possible taking into consideration the state of the technology available and the economics of the improvements in the relation to the benefit.
- B. Control: Practically defined as being the closest individual to the moisture/density nuclear gauge during operation (hand reach three feet).
- C. DEP: Pennsylvania Department of Environmental Protection.
- D. Dose: A measure of the concentration of any ionizing radiation to body tissues in terms of the energy absorbed per unit of mass of the tissue. Usually measured in rad or millirad (mrad).
- E. DOT: United States Department of Transportation.
- F. Ionization: The process through which an atom or molecule becomes negatively or positively charged by gaining or losing electrons. This energy transfer poses a health hazard if too much is absorbed by the human body.
- G. Inverse Square Law: The intensity of a point source of radiation is inversely proportional to the square of the distance from the source.
- H. Leak Test: A test to ensure the source material remains sealed to prevent the equipment and areas around the source from being contaminated.
- I. NRC: Nuclear Regulatory Commission.
- J. PEMA: Pennsylvania Emergency Management Agency.
- K. Personal Dosimetry: The act of monitoring cumulative radiation exposure due to ionizing radiation through the use of a film badge dosimeter or film badge. The badge consists of two parts: photographic film and a holder.
- L. Radiation: The emission of energy as electromagnetic waves or as moving subatomic particles, especially high energy particles which cause ionization. There are five types of radiation: alpha, beta, gamma, neutron and x-ray.
- M. Radioactive Material: Any material which emits by spontaneous nuclear disintegration, corpuscular or electromagnetic emanations. All suspected radioactive materials shall be referred to in the Strategic Environmental Management Program (SEMP).
- N. Restricted Area: Any area to which access is controlled by PennDOT for purposes of protection of individuals from exposure to radiation or radioactive materials.
- O. Rem: A measure of the dose of any ionizing radiation to body tissue in terms of its estimated biological effect relative to a dose of 1 roentgen (r) of x-rays (1 millirem (mrem)=0.001 rem). The relation of the rem to other dose units depends upon the biological effect under consideration and upon the conditions for irradiation.
- P. Shielding: Any material that will reduce the radiation exposure emitted from the source such as sandbags of stone or other dense material.
- Q. Shutter Check: This procedure is a verification that the shutter is closed so that radiation exposure is minimized.
- R. Unrestricted Area: Any area to which access is not controlled by PennDOT for purposes of protection of individuals from exposure to radiation or radioactive materials.

5. Roles and Responsibilities

- A. Radiation Safety Officer (RSO) Materials Testing Laboratory Chief Chemists
 - (1) Ensure radiological safety and compliance with PEMA, DEP, NRC and DOT regulations and conditions of the radioactive materials license issued by DEP.
 - (2) Ensure radiation producing instrumentation is registered with DEP and is current.
 - (3) Provide technical guidance involving transport, labeling, handling, storage, safe practices, dosimetry and training in relation to radiation emitting instrumentation upon request.
 - (4) Conduct a physical inventory every six months of moisture/density nuclear gauges.

- B. Bureau of Construction and Materials - Materials Testing Laboratory
 - (1) Coordinate repairs or replace worn or damaged parts on moisture/density nuclear gauges provided by the manufacturer.
 - (2) Perform yearly calibration of moisture/density nuclear gauges.
 - (3) Process leak test samples three times per year.
 - (4) Maintain records of moisture/density gauges and exposures.
 - (5) Provide training.
 - (6) Administer/create the moisture/density nuclear gauge program.
- C. Moisture/Density Nuclear Gauge Operators/Designated District Supervisors
 - (1) Ensure that all moisture/density nuclear gauge boxes are marked appropriately.
 - (2) Ensure that approved storage areas are marked appropriately.
 - (3) Ensure that only trained and licensed PennDOT employees have access to the moisture/density nuclear gauges.
 - (4) Wear personal dosimeter exposure badge when operating, transporting or handling the moisture/density nuclear gauge and store the badge properly when not in contact with the gauge.
 - (5) Maintain and provide appropriate shipping papers with each gauge.
 - (6) Check and inspect moisture/density nuclear gauge shipping case(s) for integrity.
 - (7) Keep moisture/density nuclear gauges clean and serviceable.
 - (8) Maintain charging procedures for the moisture/density nuclear gauges.
 - (9) Perform shutter checks.
 - (10) Perform leak test sampling of the moisture/density nuclear gauge three times per year and forward samples to the Materials Testing Laboratory.
 - (11) Submit the moisture/density nuclear gauge(s) for annual calibration to the Materials Testing Laboratory.
 - (12) Submit personal dosimeters for quarterly review/replacement.
 - (13) Submit nuclear testing log monthly in accordance with regulation.
 - (14) Respond per the Radiation Incident Letter in the event of an emergency.
- D. Employee Safety and Training Division
 - (1) Maintain this protocol.
 - (2) Ensure that the overall protocol is evaluated annually for effectiveness or updates.
- E. Employees
 - (1) Report any damaged, suspected or known radioactive material to a manager/supervisor immediately.
 - (2) Adhere to any radiation/radioactive material signs.

6. Safety Practices

- A. PennDOT is committed to following best practices related to radiation safety. These practices include adhering to ALARA principles.
- B. Employees will use radiation safety best practices of time, distance and shielding to decrease possible exposure.
 - (1) To meet this practice, radiation producing instrumentation shall be used only for approved work purposes and time will be limited to the least duration necessary to get desired results.
 - (2) When possible, employees will stand and keep all extremities as far away from the radiation producing machine as possible to decrease radiation dose.

- (3) Since radiation dose decreases using the inverse square law, even a short increase in the distance between the employee and the radiation producing machine during operation can make a large difference in dose levels.
 - (4) Employees shall ensure all shielding provided by the manufacturer or recommended by the RSO is equipped on the radiation producing instrumentation prior to each use.
 - (5) Employees shall position themselves according to manufacturer or RSO recommendations when operating the radiation producing instrumentation to ensure adequate shielding.
- C. Laser work and similar operations create intense concentrations of heat, ultraviolet, infrared and reflected light radiation. PPE shall be selected based upon the laser manufacturer's recommendations and the operating conditions. Always ensure laser protective eyewear is rated for the wavelength(s) of the laser be used. If multiple lasers may be used, eyewear may need to be changed as different lasers are activated.

7. Personal Dosimetry and Monitoring Requirements

In accordance with the DEP, Bureau of Radiation Protection regulations, personal dosimetry devices shall be provided to:

- A. Moisture/density nuclear gauge operators and designated district supervisors or any other adult likely to receive more than 500 mrem in a year from external sources of penetrating radiation (i.e. gamma, x-rays, beta particles and neutrons).
- B. Minors (under the age of 18 years) likely to receive more than 50 mrem in a year from external sources of penetrating radiation.
- C. Declared pregnant employees likely to receive more than 50 mrem during the entire nine month gestation period from external sources of penetrating radiation.
- D. Any individual entering a high radiation area (>100 mrem/hour) at a distance of 30 cm from the source of radiation.
- E. Personal dosimeter monitoring:
 - (1) The dosimeter shall be worn at all times while operating, transporting or handling a moisture/density nuclear gauge, XRF and XRD instrumentation.
 - (2) The dosimeter shall be worn at chest level or at the waist. It is desirable to wear the dosimeter at the same location all the time.
 - (3) Dosimeters not in use shall be stored in a radiation-free area to prevent nonwork related exposure, preferably an indoor environment such as an office.
 - (4) PennDOT is responsible for the quarterly purchasing and administering of dosimeters for employees applicable to this protocol before the next wear period (the start date is shown on the dosimeter). Start wearing the new dosimeter on the date shown.
 - (5) At the end of the wear period, snap the dosimeter from its holder and return to the Construction and Materials Division for shipping to the dosimetry company.
- F. DEP has established annual exposure limits that if exceeded, require the employee be removed from any work involving radioactive material. The annual exposure limits are as follows:

Category	Portion of Body	Yearly Dose
Deep Dose Equivalent	Whole Body	5,000 mrem
Shallow Dose Equivalent	Extremities and Skin	50,000 mrem
Eye Dose Equivalent	Lens of the Eyes	15,000 mrem

- G. In addition to the DEP dose limits, PennDOT has imposed its own limit of 300 mrem in a single quarter. In the event of an exposure of 300 mrem or greater occurs in a quarter, an employee shall account for how they received the exposure. Upon notification of such a level of exposure, the employee shall respond in writing to the Construction Materials Division as to what activities took place in the quarter that may have attributed to the exposure. The RSO will follow up with the exposed employee and/or the District Safety Coordinator. After the incident has been identified and addressed, the RSO will accept the written response.

8. Labeling, Marking and Handling Requirements

- A. The packaging and transport of moisture/density gauges shall be carried out in accordance with applicable DOT regulations. These requirements are found in Title 49 of the United States Code of Federal Requirements (49 CFR).
- B. 49 CFR requires the shipper to inspect each package before shipment to ensure that the package is physically sound and that each closure device is properly installed, secured and free of defects.
- C. Additional information can be found in the Nuclear Gauge Operator's Safety Training Manual available upon request from the Construction Materials Division.

9. Contractors/Consultants

- A. Contractors and consultants shall comply with this standard and all requirements of each applicable standard identified in Section 3.
- B. Contractors who operate radiation emitting equipment shall have a written radiation program and utilize their own equipment such as, but not limited to: XRF's, XRD's and soil moisture/density nuclear gauges.
- C. If PennDOT employees will be working near contractors using radiation emitting equipment, the contractor will be responsible for ensuring the evaluation and control of the radiation.
- D. Contractors shall operate under the direction of the RSO of their organization. PennDOT employees shall not serve in the function of RSO for any other organization.

10. Storage Requirements

- A. Soil Moisture/Density Nuclear Gauges
When on a temporary job site or other permanent storage facility (Materials Testing Laboratory), the entrance to the storage area shall be marked with the following:
 - (1) Notice to employee's poster
 - (2) Notice to workers
 - (3) Radiation incident letter
 - (4) Caution radiation area signage
- B. X-ray Fluorescence (XRF) and X-ray Diffractometer (XRD)
When on a temporary job site or other permanent storage facility, the entrance to the storage area shall be marked with the following:
 - (1) Notice to employee's poster
 - (2) Notice to workers
 - (3) Radiation incident letter
 - (4) Caution radiation area signage
- C. Additional information can be found in the Nuclear Gauge Operator's Safety Training Manual which is provided to all PennDOT employees who complete the Nuclear Gauge Training and is available upon request from the Construction Materials Division.

11. Moisture/Density Nuclear Gauges Security

- A. The licensed moisture/density nuclear gauge operator is responsible for “control” of the nuclear gauge in the field as well as proper storage both on the job site and in the district permanent facility.
- B. Moisture/density nuclear gauges shall be secured on site in such a manner that unlicensed individuals would have to disable multiple locking devices to access the gauge.
- C. Access to at least the first and second locks shall be to only licensed moisture/density nuclear gauge operators.

12. Nuclear Testing Log

- A. The DEP Bureau of Radiation Protection requires PennDOT to track the location of the radioactive source at all times. The nuclear testing log (Form TR4271) provides a means of tracking the location. It also provides a record of moisture/density nuclear gauge usage for each month.
- B. Additional information can be found in the Nuclear Gauge Operator’s Training Manual which is provided to all PennDOT employees who complete the Nuclear Gauge Training and is available upon request from the Construction Materials Division.

13. Radiation Incidents

- A. All employees who operate, handle or transport Nuclear Testing Gauges shall be instructed in and are required to follow safety practices and notifications in an event of an incident/accident according to Project Office Manual, Pub 2, Part B, Section 4, Page 41.
- B. Some examples of an incident/accident could be any of the following: theft of a moisture/density nuclear gauge, physical damage to a moisture/density nuclear gauge by a moving vehicle, the source rod of a moisture/density nuclear gauge is stuck in the ground or damaged and the radioactive source is unable to be pulled up in the shielded position.

14. Training

- A. Training is provided and conducted by the RSO in accordance with the radioactive materials licensing program in accordance with DEP regulation.
- B. Additional information can be provided by the RSO upon request to the Construction Materials Division.

15. Program review

The effectiveness of this protocol in reducing radiation exposure shall be reviewed annually by the Employee Safety and Training Division.

16. Recordkeeping

All documentation relating to the duration, training, inspection and logs are outlined in the appropriate license issued through the DEP Bureau of Radiation Protection (BRP).

Employee initial and ongoing training shall be maintained by the RSO at the Materials Testing Laboratory.

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as “original”.

Section	Content
1-15	Original based on AIPP structure for protocols

Protocol 28 – Lead Exposure Control

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3	Applicable Standards	P28 - 1
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6	PPE	P28 - 3
7	Renovation/Repair Projects	P28 - 3
8	Inspection of Suspected Lead Based Paint	P28 - 4
9	Radiation Hazards	P28 - 5
10	Abatement and Contractor License Requirements	P28 - 5
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1. Policy

PennDOT is committed to ensuring that the risk associated with inspecting and working around lead or lead based paint has been adequately and appropriately addressed. This protocol provides basic information for assuring a safe workplace and establishes mandatory requirements for employee protection from lead.

2. Scope

This protocol applies to PennDOT employees and establishes minimum requirements for the performance of lead inspections and the removal of lead based paint. All employees performing lead inspections shall hold a current PA Labor & Industry Lead Building Inspector license. When required, regardless of scope, abatement shall be performed by a third party PA licensed and certified lead contractor.

3. Applicable Standards

- A. OSHA 29 CFR 1910.1025 – Toxic and Hazardous Substances Lead
- B. OSHA 29 CFR 1926.62 Lead
- C. EPA 40 CFR Part 745 – Lead; Notification Requirements for Lead Based Paint Abatement Activities and Training
- D. PA ACT 199544 – The Lead Certification Act
- E. PennDOT Specifications Pub 408, Section 1072
- F. Project Office Manual, Pub 2, Section B.4.18
- G. Waste Management Guidance Manual, Pub 611
- H. SSPC 9302, Industrial Paint Removal Handbook, 2nd Edition, Volume I
- I. SSPC 9506, Project Design, Industrial Lead Paint Removal Handbook, Volume II

4. Definitions

- A. Action Level: Employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 $\mu\text{g}/\text{m}^3$) calculated as an 8 hour Time Weighted Average (TWA).
- B. DEP: Pennsylvania Department of Environmental Protection.
- C. EPA: United States Environmental Protection Agency.
- D. Hazardous Waste (lead paint debris): Waste that is classified as hazardous due to its concentrations of regulated hazardous substances. Paint debris is classified as hazardous waste if, after testing by the Toxicity Characteristic Leaching Procedure (TCLP), the leachate contains any of the eight metals or other substances in concentrations at or above limits established in 40 CFR 261, EPA, Identification and Listing of Hazardous Wastes.
- E. Lead: Metallic lead, all inorganic lead compounds and organic lead soaps. Lead is harmful when absorbed through inhalation or ingestion. The lead pigments used in paints comply with this definition.
- F. Lead Based Paint: Paint or other surface coatings that contain lead equal to or greater than 1.0 mg/cm² or 0.5 percent by weight. Surface coatings include paint, shellac, varnish or any other coating, including wallpaper which covers painted surfaces.
- G. Permissible Exposure Limit (PEL): The airborne concentration of lead that an employee may be exposed to without the use of respirators or other controls. Employee exposure shall not be in excess of 50 $\mu\text{g}/\text{m}^3$ calculated as an 8 hour TWA.
- H. Regulated Area: An area established by the contractor to demarcate the areas where airborne concentrations of lead exceed or can be expected to exceed the action Level.
- I. XRF Reading: X-ray fluorescence spectrometer/instrument is a nondestructive analytical technique used to determine the elemental composition of materials.

5. Roles and Responsibilities

- A. District Executives/Bureau Directors
 - (1) Ensure the proper implementation of this protocol in accordance with PennDOT procedures.
 - (2) Provide the necessary resources to PennDOT Bridge Inspectors and employees involved with inspecting lead based paint on bridges and in facilities.
- B. Employee Safety and Training Division
 - (1) Establish and maintain PennDOT policy and guidance for implementing an effective lead exposure safety protocol.
 - (2) Provide guidance on the medical clearance and fit testing in accordance with Pub 445M, Protocol 24A, Respiratory Protection.
 - (3) Assist with implementing the medical surveillance for employees who are or will be exposed to lead in excess of the action limit.
 - (4) Provide timely follow up on employee concerns.
- C. Lead Based Inspectors
 - (1) Follow the inspection procedures for bridge demolition and renovation projects in Section 6 of this protocol.
 - (2) Maintain a current certification and PA license to inspect lead and take samples of paint chips in accordance with national standards. Inspectors are not permitted to perform any lead abatement.
- D. Structure Control Engineer/Managers/Supervisors
 - (1) Ensure the proper engineering controls, administrative controls and PPE are available.
 - (2) Ensure applicable employees attend appropriate training when required.
 - (3) Remind employees to report and be aware of damaged, suspected or known lead based paint immediately.

- (4) Forward any concerns of suspected lead based paint to the District Environmental Manager, Project Manager, Facilities Management Division, Bridge Inspection Section and Employee Safety and Training Division.
- (5) The Structure Control Engineer in lieu of the District Bridge Engineer is specifically responsible for supervising operations for lead based paint testing and sampling and prior to commencement of sandblasting or bridge painting.

E. Employees

- (1) Report any damaged, suspected or known lead based paint to their respective manager/supervisor immediately.
- (2) Do not disturb any suspected or known lead based paint.
- (3) Properly wear all PPE including respirators, as outlined in this protocol when applicable.

6. Safety Practices

- A. All employees exposed at or above the PEL of lead will be required to use PPE including but not limited to:
- (1) Safety glasses or goggles
 - (2) Disposable gloves (nitrile or rubber)
 - (3) Disposable clothing or coveralls
 - (4) Respiratory protection – N95 rating at minimum

7. Personal Dosimetry and Monitoring Requirements

- A. The initial observation of the renovation/repair project shall be conducted prior to the work and at least once every four hours while the work is being completed. This observation will include but is not limited to the following:
- (1) Proper use of PPE;
 - (2) Preparation of work area to contain the lead hazards;
 - (3) Proper signage;
 - (4) Restriction of work area;
 - (5) Proper clean up after each shift or after work is completed; and
 - (6) Proper disposal of lead based chips, dust and other debris in accordance with Pub 2, Project Office Manual, Section B.4.18 and Pub 611, Waste Management Guidance Manual.
- B. When performing renovation/repair work to reduce the risk of exposure the following precautions shall be followed:
- (1) Do not peel or scrape paint from surfaces. Never use fire to strip paint.
 - (2) Ensure all surfaces remain free of dust accumulations.
 - (3) All vacuums must be used and emptied in a manner that minimizes dust and must be equipped with HEPA filters.
 - a. Effective methods include wet methods, such as wet sweeping, shoveling or brushing are allowed.
 - (4) Air monitoring shall be completed for any tasks that have the potential to produce lead dust, fumes or mist to determine if exposure is at or above the action level or PEL.

8. Labeling, Marking and Handling Requirements

A. Collection of paint chip samples

- (1) Collection of paint chip samples shall be collected by a certified inspector and be submitted for analysis by a laboratory recognized under the EPA's National Lead Laboratory Accreditation Program (NLLAP).
- (2) Paint chip samples should contain all layers of paint (not just peeled layers) and shall always include the bottom layer.
- (3) Paint from four square inches (25 square centimeters) should provide a sufficient quantity for laboratory analysis per section 3G of this protocol.
- (4) In all cases, the surface area sampled shall be recorded.
- (5) Collection of paint chip samples shall be in conformance of SSPC 9302, Industrial Paint Removal Handbook, 2nd Edition, Volume I and SSPC 9506, Project Design, Industrial Lead Paint Removal Handbook, Volume II.

B. XRF Readings

- (1) Take at least three calibration check readings before beginning the inspection. Additional calibration check readings should be made every four hours or after inspection work has been completed for the day, or according to the manufacturer's instructions, whichever is most frequent. Calibration checks shall be done before the instrument is turned off and again after it has been warmed up (calibration checks do not need to be done each time an instrument enters an automatic "sleep" state while still powered on).
- (2) Take at least one individual XRF reading on each testing combination and in each room equivalent within a building. For walls, take at least four readings (one reading on each wall) in each room equivalent.
- (3) Determine whether to correct the XRF readings for substrate interference by consulting the XRF Performance Characteristic Sheet. If test results for a given substrate fall within the substrate correction range, take readings on that bare substrate scraped completely clean of the paint.
- (4) Classify XRF results for each testing combination. Readings above the upper limit of the inconclusive range are considered positive, while readings below the lower limit of the inconclusive range are considered negative. Readings within the inconclusive range (including its boundary values) are classified as inconclusive. Some instruments have a threshold value separating ranges of readings considered positive from readings considered negative for a given substrate. Readings at or above the threshold are considered positive, while readings below the threshold are considered negative.

C. Bridge Painting

- (1) Most older steel bridges contain lead based paint that results in the need for strict environmental control. Prior to starting a bridge painting project, the paint shall be tested for lead and other hazardous materials under the supervision of the District Bridge Engineer.
- (2) A project specific lead abatement plan shall be designed for the removal and proper disposal of lead based paint and blast material for contractors.

D. Facility inspections are conducted on a quarterly basis by Penn State Facilities Engineering Institute. The facility inspector shall document on the Facility Condition Assessment to address lead paint found in buildings and stockpiles. Reference Pub 284, Facilities Manual, Chapter 6, for additional information. (Note that Pub 284 is not accessible on the PennDOT website.)

9. Radiation Hazards

- A. Portable XRF instruments used for lead based paint inspections contain radioactive isotopes that emit x-rays and gamma radiation. Proper training and handling of these instruments is required to protect the instrument operator and any other employees in the immediate vicinity during XRF usage. Ensure compliance with requirements for radiation in Protocol 27, Radiation Safety of this manual. The XRF instrument shall be in the inspector's possession at all times or securely locked or stored. The inspector shall never defeat or override any of the safety mechanisms of the XRF equipment.
- B. If feasible, employees should not be near the other side of a wall, floor, ceiling or other surface being tested. Verify that this is indeed the case prior to initiating XRF testing activities.
- C. XRF instruments used in accordance with manufacturer's instructions will not cause significant exposure to ionizing radiation, but the instrument's shutter shall never be pointed at anyone, even if the shutter is closed.

10. Abatement and Contractor License Requirements

- A. Regulated lead shall be abated prior to demolition or renovation activities. Abatement of regulated lead shall be performed by a PA Department of Labor & Industry licensed lead abatement contractor.
- B. PPE for Department Use:
 - (1) The licensed contractor shall acknowledge that all protective clothing and equipment, laundering or disposal, fit testing as needed, and hygiene facilities shall be provided for two department representatives at each site for each shift.
- C. Training for Department Representatives:
 - (1) The licensed contractor shall acknowledge that site training in accordance with the requirements of 29 CFR 1926.62 shall be provided for two department representatives at each site per shift if there is the potential for lead exposure on the project as required by Pub 408, 1072.3(b), 3.e. Include training as appropriate for other toxic metals that are present in the paint.
- D. Provide the department with letter reports signed by a Certified Industrial Hygienist which summarize all examination results that are indicative of employee exposures to (or which demonstrate proper protection from) toxic metals. In the case of lead, summarize the blood lead and zinc protoporphyrin (ZPP) results, indicate any observed trends and identify worker removal provisions that were invoked based on the results. Provide summary reports of the test results prior to worker exposures to project activities, periodic surveillance results and results upon completion of site exposures. Provide a copy of each report with an original signature within 10 calendar days after issuing the test results to the employees.
- E. PennDOT policy regarding disposal of hazardous waste shall be followed, as outlined in Pub 2, Project Office Manual, Section B.4.18 and Pub 611, Waste Management Guidance Manual.
- F. Exposure monitoring shall be conducted by the licensed lead abatement contractor during project startup and adjust all protection, training, medical surveillance and recordkeeping provisions according to the results. Environmental air monitoring requirements can be found in Pub 408, Section 1072 if applicable.
- G. In Allegheny County projects including the city of Pittsburgh, abrasive blasting permit requirements shall be coordinated with the Solid Waste Section of the Allegheny County Health Department.
- H. All contract work completed at PennDOT owned worksites shall meet the requirements of the following agencies: DEP, EPA and OSHA, along with Pub 408, Section 1072.

11. Warning Signage

- A. Warning signs shall be posted at all approaches to regulated areas so that an employee may read the signs and take necessary protective steps before entering the area. All Hazardous Waste (Lead) must be secured in appropriate containers and placed in an enclosed and locked area.
- B. All warning signs shall display the following information:

DANGER
LEAD
MAY DAMAGE FERTILITY OR THE UNBORN CHILD
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM
DO NOT EAT, DRINK OR SMOKE IN THIS AREA

12. Medical Surveillance

- A. General
 - (1) Construction Inspectors that must enter a containment area for lead based paint abatement at least one time per year in which the exposure level is likely to be at or above $30 \mu\text{g}/\text{m}^3$, shall have the following blood tests performed two times within a 365 day period (once during the work season just before the risk of exposure to airborne lead is the greatest and as soon as possible after the final entry into the containment area).
 - a. Blood Lead (PbB)
 - b. Blood Zinc Protoporphyrin (ZPP) Procedures
 - (2) PennDOT shall make the lead medical surveillance available at no cost to the employee and at a reasonable time and place for all employees who are, or are likely, to enter a containment area for lead based paint abatement at least one time per year.
 - (3) PennDOT shall ensure that all medical examinations and procedures required by this section are performed by a Service Provider as defined in Chapter G, Industrial Health, Section B.

13. Training

- A. Lead Based Paint Inspector Initial
 - (1) A designated contractor shall provide the initial training to all potential Bridge/Facility inspectors that require certification.
 - (2) Upon successful completion of initial training, employees shall be required to pass a PA Department of Labor & Industry approved PA Lead Based Paint Inspector examination offered through the PA State Civil Service Commission.
- B. Lead Based Paint Inspector Refresher
 - (1) A refresher training is provided to employees who passed the Lead Based Inspector Initial course every three years.

14. Program Review

The Employee Safety and Training Division shall review this protocol annually to determine compliance and effectiveness and take action on any noted deficiencies. The review shall be documented in Section 15, Recordkeeping.

15. Recordkeeping

- A. Employee initial and ongoing certification and licensing shall be maintained by the employee.
- B. All records of medical surveillance of employees shall be maintained for the duration of employment, plus 30 years by the applicable District Safety Coordinator.
- C. All lead inspections shall be kept on file for the life of the building, stockpile or bridge at the respective region/district that the inspection was performed.
- D. Contracted abatement shall include the documentation listed below with a copy of the contract specifications provided to PennDOT at the completion of the project:
 - (1) Air sampling log
 - (2) Personal and high volume air sampling
 - (3) Copies of notifications of work
 - (4) Photographs taken before, during and after the abatement
 - (5) Waste shipment records
 - (6) Final dispositions records of waste from the landfill site
 - (7) Lead based paint abatement log

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH), is identified as "original".

Section	Content
1-15	Original based on AIPP structure for protocols

Protocol 29 - Safety Standards for Asbestos Containing Materials

Section	Topic	Page

PennDOT is committed to reduce or eliminate the level of exposure to asbestos in the work environment from work tasks and/or equipment to safe levels through engineering controls, administrative controls and/or personal protective equipment.

1. Scope

This protocol applies to all PennDOT employees and work tasks or equipment that may result in the employee encountering asbestos.

UNDER DEVELOPMENT

Protocol 30 – Mobile Equipment

Section	Topic	Page
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1. Policy

PennDOT is committed to ensuring that the hazards associated with operations of mobile equipment have been adequately and appropriately addressed. This protocol provides PennDOT employees with the basic information for assuring a safe workplace, free from recognized mobile equipment hazards which may cause serious injury.

2. Scope

This protocol applies to all PennDOT employees engaging in the operation in or around mobile equipment.

3. Applicable Standards

The following list includes some related standards that may apply; however, it is not all inclusive:

- A. OSHA 1910, Subpart N Powered Industrial Trucks
- B. OSHA 1926, Subpart W Rollover Protective Structures; Overhead Protection
- C. ANSI B56.1, Safety Standard for Powered Industrial Trucks
- D. PUB 177, Equipment Maintenance and Management Policies Manual
- E. PUB 235, Equipment Operator Instructor's Manual

4. Definitions

- A. Center of Gravity: The point on an object at which an object's weight is evenly disbursed on all sides.
- B. Counterweight: The weight that is built into the mobile equipment's basic structure and is used to offset the weight of the load and to maximize the vehicle's resistance to tipping over.
- C. Deadlined: Any unit of equipment that has a defect or deficiency shall be removed from service that fall into one of the following categories:
 - (1) It is determined to be unsafe to operate any unit or tow a unit of towed equipment.
 - (2) It is determined to be illegal to operate any unit or tow a unit of towed equipment.
 - (3) Operation may result in additional damage to the unit.

- D. Fulcrum: A fixed point that acts as the pivot point. For example, on a sit down counterbalanced forklift, the fulcrum or pivot point is the axle of the front wheels.
- E. Grade: The slope of a surface, which is usually measured as the number of feet of rise or fall over a 100 foot horizontal distance (the slope is expressed as a percent).
- F. Mobile Equipment: Mobile duty vehicles specifically designed for executing construction tasks such as large building projects or infrastructure activities.
- G. Lateral Stability: A truck's resistance to overturning sideways.
- H. Line of Action: An imaginary vertical line through an object's center of gravity.
- I. Load Center: The horizontal distance from the load's edge (or the fork's or other attachment's vertical face) to the line of action through the load's center of gravity.
- J. Longitudinal Stability: The truck's resistance to overturning forward or rearward.
- K. Moment: The product of the object's weight times the distance from a fixed point (usually the fulcrum). In the case of a powered industrial truck, the distance is measured from the point at which the truck will tip over to the object's line of action. The distance is always measured perpendicular to the line of action.
- L. Powered Industrial Truck (PIT): Any mobile power propelled (e.g., electric or fuel) truck used to carry, push, pull, lift, stack or tier materials. PITs can be ridden or controlled by a walking operator. Examples of PITs include forklift trucks, narrow aisle rider trucks, straddle stackers and walking pallet trucks.
- M. Rollover Protection Structure (ROPS): is a system or structure intended to protect equipment operators from injuries caused by overturns or rollovers.

5. Roles and Responsibilities

- A. District Executives/Bureau Directors
 - (1) Ensure the proper and timely implementation of this protocol.
 - (2) Ensure all employees are provided resources and training as outlined in this protocol.
- B. Fleet Management Division
 - (1) Administer and supervise training for operators with assistance from the Employee Safety and Training Division.
 - (2) The Equipment Manager or a designee will determine whether a unit shall be deadlined.
 - (3) Ensure all new equipment complies with Pub 177, Equipment Maintenance and Management Policies Manual, before disbursing to the field.
 - (4) Maintain equipment inventory on an annual basis.
 - (5) Maintain mobile equipment training records.
 - (6) Schedule repairs/maintenance according to the manufacturer's recommendations and the Preventative Maintenance (PM) program.
- C. Employee Safety and Training Division
 - (1) Maintain this protocol.
 - (2) Assist Fleet Management Division with training and certification.
 - (3) Periodically conduct inspections ensuring safe operating procedures are followed and provide feedback accordingly.
 - (4) Respond to employees' concerns in a timely manner.
- D. Managers/Supervisors
 - (1) Ensure employees receive training in accordance with the requirements outlined in this protocol.
 - (2) Enforce workplace rules associated with safe driving.

- (3) Enforce safe operation rules and procedures according to Section 9 of this protocol.
- (4) Enforce the use of the Form M-614, Operator Daily Report for Mobile Equipment checklists and review to identify any issues.

E. Employees (Operators)

- (1) Complete the Form M-614 before and after the operation of mobile equipment.
- (2) Follow the rules and procedures outlined for safe operation.
- (3) Reinforce proper operations with other employees by sharing information and acknowledging and reporting any unsafe acts or conditions.
- (4) Attend all applicable training sessions.
- (5) Immediately report any deficiencies or issues to a manager/supervisor or if mobile equipment is not operating correctly. Document all deficiencies on the Form M-614.

6. Procedures

A. Equipment Inventory

- (1) In order to group equipment for summary reports on the availability of equipment and use of equipment, all equipment is assigned a 17 digit alphanumeric code in accordance with the Equipment Classification Code (ECC) structure.
- (2) Fleet Management shall review, update and make changes to the equipment inventory on an annual basis.

B. Inspections

- (1) PennDOT mobile equipment is required to be inspected at the beginning and end of each shift with any deficiencies being reported immediately.
- (2) Any authorized operator may conduct the inspection using the Form M-614.
- (3) The copy (yellow) of the Form M-614 shall be kept with the mobile equipment at all times to document that an inspection has been completed for the shift.
- (4) Manager(s)/supervisor(s) on a daily basis are required to collect a copy (white) of all Form M-614's for all equipment operated, review for accuracy, and print and sign their name on the Form M-614 before turning them into the appropriate county garage.
- (5) All mobile equipment deficiencies noted on Form M-614 shall be entered into Plant Maintenance on IW25/IW21 screen and completed on the next PM day unless it is deemed necessary to complete work immediately in order to provide safe operating equipment.

7. Maintenance

- A. If mechanical or performance issues are discovered, operators shall report this to their manager/supervisor immediately. If the issue jeopardizes safe operation or falls into the deadline or repair category determined by Fleet Management and Equipment Managers, the mobile equipment shall be taken out of service immediately and not used until authorized repairs are made.
- B. Any repairs or changes to the mobile equipment shall only be performed by PennDOT certified mechanics who are authorized to perform work.
- C. All mobile equipment is under a Preventive Maintenance (PM) Program, and all PM services are scheduled based on the equipment's ECC and are performed at the frequency established. See Pub 177, Chapter 4, Frequencies for additional information.
- D. PennDOT certified mechanics shall complete a Form M-824, Equipment Preventive Maintenance Inspection Record during the inspection/service and follow any other instructions listed on the work order. Any deficiencies found shall be written in the remarks section.

8. Modification/Fabrication/Installation

- A. The modification, fabrication or installation of mobile equipment mechanisms is strictly prohibited.
- B. Only special circumstances may warrant these changes to the mobile equipment. In order to do so, the manufacturer shall evaluate what is to be changed/modified on the mobile equipment and give written consent that the modification shall not alter the safe operation of the mobile equipment. Records of the modification event, the individual performing the modification and the written consent by the manufacturer shall be maintained for the length that the mobile equipment is in service. This includes the following:
 - (1) Addition of lights
 - (2) Addition of mirrors
 - (3) Drilling/welding equipment onto the mobile equipment
 - (4) Removing components of the mobile equipment
 - (5) Modification or attachments of the mobile equipment
- C. All modifications, fabrications and installations shall go through the SAP process. The SAP process is only accessible to a select group of individuals. Ideas or suggestions to have equipment modified, fabricated or installed can be delivered to an individual of the safety committee, a County Equipment Manager or through IdeaLink.
- D. The Fleet Optimization Task Force meeting is held every year during the first week of April. It addresses ideas/suggestions for change(s) of process and how PennDOT does business and policy as it relates to equipment. Any ideas/suggestions can be delivered to a District Equipment Manager or submitted on IdeaLink to be reviewed during the meeting.

9. Safe Operation

The following are safe operator procedures. Managers/supervisors enforce these rules to ensure that operators are demonstrating safe behaviors.

- A. General Operations
 - (1) Only trained/certified employees are permitted to operate PennDOT mobile equipment.
 - (2) Safe behaviors: circle of safety, backing/grounds person/spotter, aware of surroundings, side clearances, and center of gravity/tipping.
 - (3) All accidents involving mobile equipment shall be reported immediately to the manager/supervisor. All appropriate forms shall be completed per Pub 177, Chapter 5, Accidents and Chapter M, Section 3 of this publication, for additional procedures for Fleet and Equipment Accidents.
 - (4) Operators shall inspect the mobile equipment at the beginning and end of each shift utilizing Form M-614.
 - (5) Employees shall follow the manufacturer's equipment specific instructions for seat belt use even when equipment has Rollover Protective Structures (ROPS).
 - (6) Fall protection is required for man lifts and other mobile equipment that will raise the operator or other employee to heights greater than six feet.
 - (7) The operator shall ensure that there is sufficient clearance under overhead installations, lights, pipes, sprinkler systems, utility lines, etc.
 - (8) Stunt driving and horseplay are not permitted.
 - (9) Loads that obstruct the forward visions of the operator shall be managed by operating the mobile equipment in reverse or by having another individual guide the operator along a safe pathway.
 - (10) Whenever an operator leaves their mobile equipment, the load shall be brought to the ground (if applicable) and the mobile equipment will be put in park. If the operator leaves the mobile equipment for a distance greater than 25 feet, the device shall be turned off and the key shall be removed.

- (11) As per PennDOT policy, operators are not permitted to carry passengers, unless the mobile equipment is specifically designed by the manufacturer for passenger carrying (passenger seat, man lifts, etc.).
 - a. Only those personnel required to operate a piece of equipment and actively engaged in the operation of that equipment are permitted on that equipment while it is in motion. (Employees are “actively engaged in the operation of equipment” when that equipment is actively performing the specific function it was designed to perform, such as a paver actively applying asphalt.) If active engagement in the operation of equipment is suspended briefly while the equipment is in motion to reposition, the personnel required to operate it may remain on it as long as the speed and configuration of the equipment and the positioning of the employees are the same as when the equipment is actively performing its function.
 - b. During active instruction, a certified operator instructor or the foreman will be considered actively engaged in the operation of equipment only on self-propelled pavers, wideners, milling machines and stone chippers. No other equipment is designed with a relatively safe place for the instructor to be on the equipment while it is in motion.
 - c. Only vehicles with an enclosed cab that are equipped with seating and a seat belt for each occupant are permitted to be utilized to transport employees when they are not actively engaged in the operation of equipment. A crew cab is one example of a vehicle permitted for use to transport staff.
 - d. Equipment shall not be used to transport other employees from one location to another for a matter of convenience. If any employee is observed riding on equipment inappropriately, the employee(s) will be subject to disciplinary action.
 - e. See Chapter L of Pub 445M for seat belt use on paint trucks.
 - (12) When operating mobile equipment, the operator shall keep their arms and legs inside the vehicle at all times.
 - (13) Operators shall keep the operator’s compartment free from debris, oil, grease, mud, snow and loose objects to minimize the danger of slipping or stumbling.
 - (14) No person shall be permitted to stand or pass under the elevated portion of any mobile equipment, whether loaded or empty.
 - (15) Operators shall know the approximate weight of the load and check the mobile equipment’s rated capacity before raising the load.
 - (16) Operators shall inspect the load for stability, projections, poor stacking and damaged skids or pallets before lifting it, if applicable.
 - (17) Mobile equipment’s controls shall only be operated from the driver’s seat, if applicable, unless equipped by the manufacturer for remote control operations.
 - (18) Unstable or leaning pallets stacks shall be restacked.
 - (19) Attachments shall not be used to push or ram loads unless specifically designed to do so and approved by the manufacturer of the mobile equipment.
- B. Traveling (Tramming)
- (1) Operators shall avoid traveling along designated pedestrian travel ways and designated fire exit paths.
 - (2) Operators shall obey all traffic signs and signals.
 - (3) A safe distance shall be maintained between mobile equipment when traveling in the same direction.
 - (4) Operators shall take extreme caution when passing another department mobile equipment within the same lane as the operator. Always activate the horn and obtain confirmation from the other mobile equipment operator that they are aware of you, and it is safe to pass. Establish eye contact and acknowledge other operators.

- (5) The operator shall slow down and sound the horn at cross aisles and other locations where vision is obstructed.
- (6) When nearing pedestrians, employees or other vehicles, the operator shall sound their horn to make other personnel aware of the operator's location.
- (7) Operators shall take extreme caution around pedestrian and employee areas and stop to give the right of way for crosswalks and other intersections.
- (8) When ascending or descending grades in excess of 10 degrees, industrial forklifts shall be driven with the load upgrade.
- (9) While carrying loads, traveling through high traffic areas, turning, traveling up or down a gradient, traversing slippery or wet conditions or traveling over unstable terrain (mud, gravel, dirt, etc.), speeds shall not exceed five mph over the posted speed limit for the area.
- (10) Operators shall use caution when traveling from bright daylight areas to dimly lit areas and vice versa.
- (11) Operators shall avoid running over objects and shall try to travel over surfaces that are as level as possible.
- (12) Attachments shall be kept close to the ground during operation and when carrying loads shall be tilted upwards to avoid the load slipping off.

C. Loading/Unloading Trailers

- (1) Keep equipment properly centered on the trailer.
- (2) Use a spotter, if available, to properly align equipment.
- (3) Keep any attachments low to deck.
- (4) Maintain a controlled speed.
- (5) Be cautious of pinch points between the trailer, pintle hook, and any machines being moved.
- (6) Utilize seat belts in accordance with PennDOT policy and manufacturer recommendations.
- (7) Keep the work area clear. Ensure there are no people nearby.
- (8) Watch for obstructions and use extra caution when backing.

D. Fueling/Charging

- (1) Battery operated mobile equipment
 - a. Batteries shall be changed by trained, authorized employees only.
 - b. Electronic devices shall be turned off before being charged.
 - c. Smoking shall not be permitted while operating mobile equipment or in the battery changing area.
 - d. Safety goggles, splash face guard, corrosive resistant apron and corrosive resistant hand/arm covers shall be worn when changing batteries.
 - e. Battery changing areas shall be equipped with an eyewash station.
 - f. When charging batteries, pour acid into water. Never pour water into acid.
- (2) Liquefied Petroleum (LP/Diesel/Gas)
 - a. Mobile equipment shall be turned off prior to fueling.
 - b. Smoking shall not be permitted in LP tank storage areas or refueling areas.
 - c. Safety glasses and insulated, loose fitting gloves such as leather or insulated neoprene shall be utilized when changing LP tanks.
 - d. Whenever removing a LP tank, practice safe storage of depleted or full fuel tanks. Tanks shall be stored on the ground and be secured upright.
 - e. Remain with the nozzle while fueling. Do not get in and out of the mobile equipment.
 - f. To avoid a spill, do not over fill or top off the tank.

10. Training

- A. Fleet Management Division and Operator Instructors in assistance with the Employee Safety and Training Division provide a wide variety of mobile equipment trainings such as:
- (1) (AL) Aerial Lift
 - (2) (BB) Bridge Inspection Crane Bucket Operator (second operator)
 - (3) (BI) Bridge Inspection Crane Operator (primary operator)
 - (4) (BM) Boom Mower
 - (5) (BR) Spider Broom
 - (6) (CL) Conveyor Loader
 - (7) (CS) Stone or Chip Spreader (self-propelled)
 - (8) (DZ) Track Crawler
 - (9) (FI) Finish Paver
 - (10) (GA) Excavator
 - (11) (GD) Grader
 - (12) (GT) Fuel Truck
 - (13) (HT/LD) Heavy Truck/Loader
 - (14) (IU) Incidental Use
 - (15) (LB) Paver Maintainer
 - (16) (MH) Backhoe
 - (17) (MM) Milling Machine
 - (18) (MP) Motor Paver
 - (19) (MT) Tractor Maintainer (side dozer)
 - (20) (OD) Oil Distributor
 - (21) (PB) Pavement Breaker
 - (22) (PD) Post Driver
 - (23) (PM) Paint Machine
 - (24) (PR/RS/RT) Roller
 - a. RS – 3Wheel & Tandem Roller 20,001 lbs. or more
 - b. RT – Rubber Tire Roller
 - c. PR – Steel Wheel Roller Less than 20,000 lbs.
 - (25) (RP) Pothole Patching Machine
 - (26) (SB) Snow Blower
 - (27) (SL) Sloper
 - (28) (SP) Sweeper
 - (29) (SS) Skid Steer Loader
 - (30) (TH/TB/ME) Track Hoe
 - a. TH – 25,001 lbs. or more
 - b. TB – 12,501 lbs. to 25,500 lbs.
 - c. ME – 12,500 lbs. and under
 - (31) (TM) Tractor Mower
 - (32) (TO) Tractor

- (33) (TR) Tag Trailer
- (34) (TT) Truck and Flatbed Trailer
- (35) (WD) Road Widener
- (36) (WT) Tunnel Wash Truck
- (37) (TP) Tunnel Platform Truck
- (38) (WR) Tunnel Wrecker
- (39) Advanced Refresher
- (40) Industrial Forklift
- (41) Liquid Asphalt Safety
- (42) Litter Picker Vacuum/Rake
- (43) Load Securement
- (44) Pipe Cleaning Machine
- (45) Small Trailer
- (46) Tar Kettle
- (47) Temporary Equipment Operator Orientation
- (48) Tow Plow
- (49) Tri-Axle Dump Truck
- (50) Wing plow
- (51) Winter Maintenance Program
- (52) Wood Chipper

- B. Refer to Pub 235, Equipment Operator's Instruction Manual, for criteria outlines for the trainings listed above.
- C. Fleet Management Division (FMD) utilizes two training site locations to conduct Truck and Loader training for operators on permits and off-road core equipment trainings as listed in Pub 177 and/or Pub 235. Addresses to locations of these training sites are:
 - (1) Eastern PA Training Facility (EPTF), Fort Indiantown Gap, Route 443, Grantville, PA 17028.
 - (2) Western PA Training Academy (WPTA), 38 Academy Lane, Cheswick, PA 15024.Fleet Management Division has the oversight and discretion for training to be conducted at the district/county levels.
- D. Majority of the mobile equipment trainings are completed by Operator Instructors at the district/county level.
- E. Truck and Loader Training, due to COVID-19, this is a pilot program for new hires with a CDL Class B (minimum) and are pursuing the Transportation Equipment Operator A (TEOA) Classification. All training materials can be located on the Bureau of Maintenance and Bureau of Operations FMD Intranet Site: Training/Operators Training/Additional Training and Certification Information/Operator Training Presentation Link.
- F. Off-Road Equipment Training, due to COVID-19, is a temporary program for off-road training at the county level and will cover the off-road core equipment pieces. The training will cover excavator (Gradall), grader, and backhoe. An operator instructor from one of the FMD's Training Sites (EPTF or WPTA) shall attend the district/county training to assist with any issues/concerns and to ensure that training is performed according to the requirements listed in Pub 235, Equipment Operator Instructors Manual. All training materials can be located on the Bureau of Maintenance and Bureau of Operations FMD Intranet Site: Training/Operators Training/Additional Training and Certification Information/Operator Training Presentation Link.

G. Refresher Training

- (1) Refresher training will be the same as outlined in initial training requirements. Refresher training shall be required under the following circumstances:
- a. Every three years (forklift).
 - b. Every four years (liquid asphalt).
 - c. After an incident or accident occurs.
 - d. If significant changes occur in the workplace.
 - e. If management observes an operator acting or operating unsafely.
 - f. Equipment Operators or district/county management request refresher training.

11. Program Review

The effectiveness of this protocol in preventing workplace hazards, injuries and illnesses shall be evaluated annually by the Employee Safety and Training Division and Fleet Management Division with appropriate actions taken to address any deficiencies found.

12. Recordkeeping

Equipment operator instructors shall submit all training records and operator assessments to the appropriate management. Department certifiers shall submit certifications to applicable employees. All records shall be electronically stored, and paper copies kept with the applicable county garage clerk for the entirety of the employee's career.

Form M-614 shall be retained for three months past the date of inspection by the Equipment Manager. Form M-614 for the most current month shall be kept in front of the folder and the past two months in the back of the folder. Form M-614's shall be retained in the Equipment Office after the date of inspection. Form M-824 shall be retained for seven years in the Equipment Office.

This protocol contains new existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH), is identified as "original".

Section	Content
1-5 & 11	Original, based on AIPP requirements for protocols
10	Pub 235, Equipment Operator Instructor's Manual
6-9 & 12	Pub 177, Equipment Maintenance and Management Policies Manual

Protocol 31 – Herbicide Safety

Section	Topic	Page
1	Policy	P31 - 1
2	Scope	P31 - 1
3	Applicable Standards	P31 - 1
4	Definitions	P31 - 1
5	Roles and Responsibilities	P31 - 2
6	General Safety Practices	P31 - 3
7	Personal Protective Equipment (PPE)	P31 - 4
8	Medical Surveillance	P31 - 4
9	Training	P31 - 5
10	Program Review	P31 - 5
11	Recordkeeping	P31 - 5

1. Policy

PennDOT is committed to ensuring that the hazards associated with herbicides have been adequately and appropriately addressed. The protocol provides PennDOT employees with the basic information for assuring a safe workplace from recognized hazards which may cause occupational illnesses or injuries associated with utilizing herbicides.

2. Scope

This protocol affects all PennDOT employees who utilize or administer herbicides in the field.

3. Applicable Standards

- A. United States Department of Agriculture, Title 7, Chapter 6, Federal Insecticide Fungicide and Rodenticide Act (FIFRA), as amended
- B. Pennsylvania (PA) Pesticide Act of 1973, as amended
- C. 25 Pa. Code Chapter 92a, National Pollutant Discharge Elimination Systems (NPDES), as amended
- D. PA Department of Agriculture, Title 3, Controlled Plants and Noxious Weeds Act of October 30, 2017
- E. Herbicide Application Desk Manual
- F. Pub 23, Maintenance Manual
- G. Pub 113, Highway Foreman Manual
- H. Pub 445M, Manual for Employee Safety & Health

4. Definitions

- A. Defoliant: A substance or mixture of substances applied to plants to cause the leaves or foliage to drop off prematurely.
- B. Desiccant: A substance or mix of substances applied to plants intended to artificially accelerate the drying of plant tissues.

- C. Globally Harmonized System (GHS): A globally accepted method of hazardous substance labeling using pictograms, hazards, and/or precautionary statement(s), and a signal word of Danger or Warning.
- D. Herbicide: A substance classified as a type of pesticide used to control or eradicate prohibited and noxious plants, as required by law and to control other undesirable vegetative growth.
- E. Pesticide: Any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.
- F. Safety Data Sheets (SDS): A written document prepared by the manufacturer using a globally accepted format of chemical product safety information. It uses a standardized 16 section format and one or more of nine pictograms to designate hazard types. Hazard and precautionary statements further explain specific safety and personal protective equipment (PPE) information.
- G. Spray Adjuvants (additives): Any substance added to the spray tank, separate from the pesticide formulation, that will improve the performance of the pesticide, such as spreading, penetration, droplet size or other characteristics.

5. Roles and Responsibilities

A. Employee Safety and Training Division

- (1) Shall review this protocol annually, document the review and make updates as needed.
- (2) Shall maintain the documented review of this protocol for the current fiscal year and previous two.
- (3) Shall maintain records of employee pesticide (herbicide) related license or certification, if applicable.

B. District Safety Coordinators

- (1) Shall ensure the Hazardous Substance Coordinator updates the master product records for herbicides in SDS Pro to include GHS labeling elements and PPE.
- (2) Assist the Employee Safety and Training Division in the annual review of this protocol, when necessary.

C. Managers/Supervisors (Including first level supervisors)

- (1) Shall ensure only qualified/trained employees are using herbicides permitted for the application.
- (2) Shall be informed of all PennDOT and contractor herbicide/pesticide applications prior to being completed.
- (3) Shall inform their county work crews of applications to prevent accidental exposure.
- (4) Shall ensure SDSs are available to employees who work with herbicides.
- (5) Shall ensure employees are adhering to the manufacturer's safety requirements and use the appropriate PPE when working with herbicides.
- (6) Shall maintain copies of their employees' pesticide (herbicide) related license or certification and be aware of the expiration date, if applicable.
- (7) Shall understand and apply first aid measures and decontamination procedures for accidental exposure and identify when employees are experiencing any adverse reactions.
- (8) Shall ensure all secondary containers are labeled or tagged according to GHS standards.
- (9) Shall ensure employees engaging in herbicide application participate in the Medical Surveillance Program, per Chapter G of Pub 445M.

D. Employees

- (1) Shall only utilize herbicides/pesticides if qualified and properly trained.
- (2) Shall adhere to all manufacturer's recommendations, including adherence to the SDS, PPE requirements, and Protocol 6, Hazardous Substance Program of Pub 445M.

- (3) Shall only utilize general use pesticides/herbicides if they are a state licensed applicator.
- (4) Participate in testing required by the Medical Surveillance Program, per Chapter G of Pub 445M.

6. General Safety Practices

- A. All herbicides shall be:
 - (1) Registered with the Environmental Protection Agency (EPA).
 - (2) Product labels shall confirm with all requirements per Protocol 6, Hazardous Substance Program of Pub 445M.
 - (3) Approved for use by the PA Department of Agriculture.
 - (4) Labeled for use on the intended site of application, such as along highway right-of-way, rest area/welcome centers, managed roadsides, etc.
 - (5) Listed as part of the Bureau of Maintenance and Bureau of Operations NPDES permit requirement.
 - (6) Applied by certified applicators with licensing as required by the PA Pesticides Act as amended or one of the following:
 - a. Registered Technician that is trained in the type of applications and under the supervisor of a certified applicator that can be on site within five hours, if necessary.
 - b. A noncertified, nonregistered technician can apply materials under the direct supervision (within eyesight and voice commands) of a certified applicator.
 - c. A noncertified, nonregistered technician can apply general use labeled herbicide materials on some properties owned by the employer.
- B. Each material used requires separate precautionary practices in handling and application, as well as considerations for existing safety and environmental programs. The individual label will provide most of the information. For additional information refer to Pub 23, Maintenance Manual, Chapter 13 (Roadside Management); Pub 113, Highway Foremen Manual, Assembly Codes 711-7801-07, 714-7711-03, 714-7712-01, 714-7713-01, 714-7715-01, 714-7715-02, 714-7715-03; Pub 55, Bridge Maintenance Manual, Assembly Code 711-7457; and the Herbicide Application Desk Manual for specific practices.
- C. The manufacturer's label provides the handling, application and PPE guidance to ensure the safety of employees who mix, load, apply or otherwise handle pesticides (herbicides). It is a violation of federal law to use a pesticide (herbicide) inconsistent with its labeling. Labels shall be reviewed:
 - (1) Before purchasing.
 - (2) To determine appropriate PPE.
 - (3) Before mixing or application.
 - (4) For information on proper storage.
 - (5) Before disposal of unused pesticide (herbicide) and empty containers.
- D. The following should be observed during herbicide application:
 - (1) Contact your District Roadside Specialist for the current herbicide materials/programs.
 - (2) The application must be made by a certified pesticide (herbicide) applicator, a trained registered technician or any other person, provided a certified pesticide (herbicide) applicator is at the worksite and within communication distance to manage and control the application, usage and safety measures.
 - (3) The Work Zone Traffic Control set up shall be placed in accordance with current Pub 213, Temporary Traffic Control Guidelines.

- (4) If application is proposed in counties where the bog turtle may be found, refer to Pub 546, Threatened and Endangered Species Desk Reference for standard operating procedures for the avoidance of adverse effects to the bog turtle.
 - a. Coordinate with District Project Manager or District Environmental Staff.
- (5) Prior to beginning work, the manager/supervisor shall give the required safety talk and provide general instructions to the work crew.
- (6) All applications must be made within the product labeled rates.
- (7) Utilize appropriate pump pressure and spray adjuvants to avoid any mist, small droplet size or off target impact.
- (8) Do not spray when wind could cause drifting of the spray.
- (9) Do not spray when rain showers are imminent.
- (10) Exercise caution when applying selective and nonselective herbicides to areas wider than two feet as concentration of materials can accumulate in drainage water and kill desirable vegetation.
- (11) Review the listed registry for no spray areas prior to application.
- (12) Follow safety instructions on the label when mixing and applying herbicides.
- (13) Eye wash kits shall be kept ready and available at all times.
- (14) Assure adequate ventilation to avoid inhalation of vapors or dust from herbicide concentrate when mixing.
 - a. Do not breathe fumes or dust of the herbicide concentrated when mixing.
- (15) When refilling the spray tank, keep the discharge end of the hose out of the water in the tank to prevent siphoning into the water source.
- (16) Regardless of the source from where the tank is being filled, an air gap is required at the outlet end of a hose or a built-in fill system on the spray tank.
- (17) The spray rig (noncomputer controlled) should maintain a constant speed for which the spray rig is calibrated. Computer controlled spray rigs should maintain a speed within the automatic adjustment variable of the computer flow control system.
- (18) All county employees/work crews will be informed of recent herbicide application activities within 24 hours of application to prevent accidental exposures.

7. Personal Protective Equipment (PPE)

- A. Managers/supervisors shall ensure that PPE and safety equipment is compliant with this protocol and maintained in a serviceable condition.
- B. Employees shall ensure that PPE is inspected before initial use during each work shift. Defects or damage shall be repaired, or the unserviceable PPE shall be replaced before work is commenced.
- C. Wear all proper PPE as listed on the product label and any additional PPE specified by the manager/supervisor.
- D. Follow the labels on the containers for the PPE requirements but be aware that the labels are only the minimum requirements for PPE. Supervisors can require employees to wear additional personal protective equipment if they deem necessary.

8. Medical Surveillance

Seasonal crew employees or employees working 7.5 hours for five consecutive days shall have medical surveillance completed by a licensed physician. Additional testing may be required as directed by the physician upon completion of initial screening. Refer to the MESH, Pub 445M, Chapter G, Industrial Health for additional information.

- A. Initial and annual testing
 - (1) Complete blood count.
 - (2) Liver function study.
- B. Initial and every three years thereafter.
 - (1) Medical questionnaire.
 - (2) Lateral and PA chest x-ray.
 - (3) Pulmonary function test.

9. Training

- A. District Roadside Specialists/Specialist Supervisor shall train employees on the appropriate application and the correct herbicides to use and associated safety measures, including adhering to the SDS and wearing PPE.
- B. Training records shall be maintained for three years by the Employee Safety and Training Division and will be recorded in LSO as completed.
- C. Training records, at a minimum, shall include:
 - (1) Employee's name.
 - (2) Type of applicator (i.e. nonstate certified or state certified).
 - (3) Date of training.
 - (4) Training content/material.
- D. Training shall occur annually for state certified applicators.
 District Roadside Specialist/Specialist Supervisor (DRSS) begin Regional Training Development Meeting planning. Training is for all Departments' licensed applicators in order to fulfill the herbicide license training requirements. It is at the discretion of the district if they want to include contractors in their training. Regional training is held in March. The agenda varies depending on region for the districts.
 - (1) Prepare agenda
 - (2) Contact speakers
 - (3) Location venue
 - (4) Register meeting with Department of Agriculture

10. Program Review

The effectiveness of this protocol in preventing herbicide exposure shall be evaluated annually by the Employee Safety and Training Division with the appropriate actions taken to address protocol deficiencies found.

11. Recordkeeping

All documentation relating to the duration, training, inspection and logs are outlined in the appropriate licensing program.

This protocol contains new and previously existing information as described in the table below. Content that is being introduced for the first time in Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original".

Section	Content
1 - 9	Original based on AIPP structure for protocols and existing publications

Systems

1. Accident/Injury Tracking System (ATS)

- A. This database was created and is maintained by the Employee Safety and Training Division, in cooperation with the Bureau of Infrastructure and Operations.
- B. ATS contains all fleet, equipment, and injury accident data from July 2002 to present.
- C. Accident data dating back to 1996 is also electronically accessible in the ATS Archive.
- D. As of February 25, 2013, data entry also includes reports of near misses.
- E. Employee Safety and Training Division staff has administrative privileges, including the exclusive ability to delete records, generate reports for all organizations, and modify user access.
- F. District Safety Coordinators (DSC) can create new records, edit existing records, and generate reports for their respective district and county organizations.
- G. A few designated employees in each county maintenance organization are granted access to create new records for their organization.
- H. The Employee Safety and Training Division has developed and maintains the ATS Entry Guide for the employees in county maintenance organizations and the ATS User's Guide for DSC and Employee Safety and Training Division staff.
- I. The URL is <http://dot.state.pa.us/pennDOT/bureaus/ats.nsf>.

2. PennDOT Data Integration Facility (PDIF) – Bureau of Human Resources BHR – Report

The Report Category, Safety Goals, includes three reports, as described below. The URL is <http://pdif.pdot.state.pa.us/Report.aspx>.

A. BHR001 – PennDOT Safety Goals

This report contains the frequencies of recordable injuries, number of hours worked, frequencies of fleet accidents, fleet mileage, current injury rate, current fleet accident rate, three year rate for last six fiscal years for all organizations (districts, counties, bureaus). The report provides the current reduction goal for fleet accidents and reduction goal for recordable injuries, and have trends charts for injury rate and fleet accident rate over last six fiscal years for all organizations. From this year, the report will also have frequencies and rates for fleet accidents with PennDOT driver's error.

- (1) Injury Rate: To calculate injury rates, PennDOT utilizes a formula established by the U.S. Bureau of Labor Statistics to measure the upward or downward trend in the PennDOT's work-related injuries. The injury rate formula is: Total PennDOT Injuries X 200,000 divided by Total Hours Worked. The injury reduction goal represents the target rate to reduce the number of employees injured out of every 100 employees.
- (2) Fleet Accident Rate: PennDOT utilizes a fleet accident rate formula established by the American National Standard Institute (ANSI) and is used to measure the upward or downward trend in PennDOT's fleet accidents. The fleet accident rate formula is: Total PennDOT Fleet Accidents X 1,000,000 divided by Total Miles Driven. The fleet accident reduction goal represents the target to reduce number of fleet accidents occurring every 1,000,000 miles driven.
- (3) Rate for Fleet Accident with Driver Error: PennDOT utilizes the fleet accident rate formula as stated above, except that the only fleet accidents with PennDOT driver error are used to calculate the rate. The formula is: Total PennDOT Fleet Accidents with Driver Error X 1,000,000 divided by Total Miles Driven. This rate is being calculated and incorporated in the report from current fiscal year.

B. BHR002 – Safety Goals Summary

- (1) This report displays four years of recordable injury and fleet accident data for all organization (districts, counties, bureaus) and includes:

- a. Frequencies
 - b. Number of hours worked/miles traveled
 - c. Annual and year-to-date rates
 - d. Reduction goals
 - e. Reduction percentages
- (2) The report is color coded as follows:
- a. Green = Reduction goals were met or exceeded
 - b. Yellow = Reduction goals were not met, but within 10% of the goal
 - c. Red = Reduction goals were not met, and the current rate is above 10% of the goal
- (3) This report will also show data as described under item one (above) for fleet accidents involving driver error.
- C. BHR003 – Comparison of Rates

The report provides comparison trend charts for injury rate, fleet accident rate, and driver error rate to compare the rates with PennDOT, districts, and counties within the district over the last six fiscal years for all organizations. The comparison charts for rates would assist the organizations to evaluate and assess their performance in context of their own district and with PennDOT.

3. PennDOT Safety Goals

In September 2012, the PennDOT Safety Goals intranet site was introduced to track fleet accident and recordable injury frequencies, and to monitor the performance of PennDOT organizations by comparing their rates for recordable injuries and fleet accidents against their rate goals. As of FY 2017-2018, data rate information is located on the PDIF site (described above). The Employee Safety and Training Division will continue to use this site for administrative purposes only to upload the Hours and Miles on a weekly basis as the source of this data for the PDIF site.

4. Safety Data Mining Application

In June 2015, the Safety Data Mining Application was introduced to facilitate ATS data aggregation for fleet and equipment accidents, injuries, and near misses. This data can be aggregated by up to 14 parameters, such as accident type, employee activity, location, years of service, age, and organization. The application does not provide any personally identifying information, but provides other details such as the event date and descriptions of the event, causes, and corrective actions. In 2017, the Safety Data Mining Application was enhanced to include seven reports to facilitate trend analysis. The URL is: <http://dot1.state.pa.us/Intranet/PennDOT/Safety/safeint.nsf>.

5. Safety Inspections Database

In August 2012, this database was introduced to track and calculate scores for inspected items on crew, garage, and stockpile inspections. It facilitates the communication and tracking of inspection scores and comments based on observations of work activities and conditions. Refer to Chapter E for details. The Employee Safety and Training Division administrates this database. DSC and district/local management are provided access, as appropriate.

6. Driver and Vehicle Services Systems

A. IBM Tivoli Output Manager (ITOM)/PERS DL&C Record Check Reports

This system stores many reports, two of which are PERS DL&C Record Check Reports 1 and 2. These reports are run monthly and authorized for use by the Employee Safety and Training Division and DSCs to monitor the status and class of driver's licenses for employees who operate a commonwealth vehicle or personal vehicle on PennDOT business. Report 1 reviews class codes of employees who are required to have a license per that job description. Report 2 covers several hundred class codes for employees who operate a commonwealth vehicle on more than an occasional basis, but are not necessarily required to have a license per their job description.

B. CDL Medical Certification Status Report #3.

This report is run monthly by the Employee Safety and Training Division and sent by email to DSCs to affirm current status of CDL vehicle operators' Medical Certifications by type and fully meets the MC criteria, or if it has been expired/downgraded.

C. Business Account Driver Record (BADR) System

This system grants authorized users access to verify current driver license information, including class, endorsements, adverse actions, expiration date, medical certification, and historical data for individual employees. It is primarily used for pre-employment purposes, but can also be used by the Employee Safety and Training Division and DSCs to look into the status of pending or current adverse actions.

D. TSO

Occasionally there are employees who do not appear on a monthly PERS DL&C Record Check Report due to errors with the license number, date of birth, employee name, or having multiple licenses. The Employee Safety and Training Division accesses the TSO/PERSDL mainframe to make needed corrections. Errors which can't be corrected through this process (mainly date of birth and name changes) will necessitate communication with DSCs or HR staff.

7. Electronic File Transfer (EFT)

The Employee Safety and Training Division utilizes the EFT to securely transfer the information that is used to generate ITOMS reports and to securely retrieve the Excel spreadsheet version of the ITOMS reports, not including Report 2.

8. Highway Administration – Safety

The Employee Safety and Training Division maintains the Safety Portal to give employees access to the information, resources, and forms they may need pertaining to employee safety and health. The URL is <https://sportal.dot.pa.gov/highway/safety/Pages/default.aspx>.

9. Program Review

This section will be reviewed for any changes and updates to make sure the information is current and relevant. Details of the annual review will be documented under Recordkeeping.

10. Recordkeeping

This section contains new and previously existing information as described in the table below. Content that is being introduced for the first time in the Pub 445M, Manual for Employee Safety and Health (MESH) is identified as "original".

Section	Content
1-10	Original, based on current practices
All	Reviewed December 2018

Systems

Form	Title	Chapter / Protocol
P9	Building Evacuation AAR Report (10-22)	Chapter I
P10	Medical Surveillance Test Form (12-18)	Chapter G
P11	Medical Surveillance Test Declination Form (8-09)	Chapter G
P12	Hepatitis B Vaccination Log (2-20)	Protocol 10
P13	Hepatitis B Vaccine Declination (4-09)	Protocol 10
P17	Injury/Incident Notification Form (10-21)	Chapter M
P19	Confined Space Request for Classification Form (8-09)	Protocol 7
P20	Confined Space Entry Permit (7-09)	Protocol 7
P21	Off-Site Rescue Initial Evaluation (9-09)	Protocol 7
P22	Potential Confined Space Identification and Classification Form (9-09)	Protocol 7
P25	Accident Investigation Report (9-17)	Chapter M
P31	Industrial Hygiene Evaluation Report (2-20)	Chapter F
P33	Safety & Health Suggestion Form (1-11)	Chapter J
P34	Inspection Checklist for Offices (6-22)	Chapter E
P57	Request for Safety Pilot (3-19)	Chapter C
P63	Ladder Inspection Checklist (10-19)	Protocol 14
P64	Machine Guarding Hazards Checklist (9-19)	Protocol 1a
P66	Scaffolding Inspection Checklist (2-20)	Protocol 26
P68	Excavation Inspection Worksheet (2-21)	Protocol 19
P69	Energized Electrical Work Permit (5-22)	Protocol 1b
P70	Hot Work Permit (8-22)	Protocol 25
P73	Near Miss Report Form (11-21)	Chapter M
P6100	Crew Safety Inspection Checklist (6-22)	Chapter E
P6101	Garage Safety Inspection Checklist (1-22)	Chapter E
P6102	Stockpile Safety Inspection Checklist (3-22)	Chapter E
P6110	Fall Protection Equipment Inspection Checklist (7-22)	Protocol 15
PUB 805	Work Related Injury Grab and Go for Supervisors (1-20)	Chapter M
PUB 806	Fleet & Equipment Accident Grab and Go for Supervisors (1-20)	Chapter M
PUB 807	Investigation Guide for Accidents & Near Misses (3-18)	Chapter M
STD541	Automobile Accident or Loss Notice (8-10)	Chapter M

This section will be reviewed annually for any changes and updates to make sure the information is current and relevant. A summary of changes resulting from each annual review will be documented below.