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Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
Manila

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DEPARTMENT ORDER)
)
NO. 162)
Series of 2015) D.O. 162 s. 2015

SUBJECT: GUIDELINES ON HOT WORK OPERATIONS (HWO) AND LOCK OUT/TAG-OUT (LOTO) PROCEDURE FOR LAND AND WATER BASED EQUIPMENT

In order to continuously provide, manage and standardize safety practices for all DPWH facilities and equipment, and attain a hazard-free and safe workplace, conforming to international maintenance practices and in compliance with Occupational Safety and Health Standards (OSHS), these guidelines on Hot Works Permit and standard procedure of Lockout – Tag-out (LOTO) are hereby issued to all concerned offices and employees to be strictly observed and followed.

Hot work refers to any process that can be a source of ignition when flammable material is present, or can be a fire hazard regardless of the presence of flammable material in the workplace. A "Hot Work" permit shall be issued to initiate a step-by-step check list for hot work safety and to keep track of activities that involve hot work.

Whereas, the locking-out and tagging-out of energy sources and equipment is used to protect workers from risk of harm in cases when non-routine activities such as maintenance, repair, or set-up are performed.

This Department Order shall establish safety measures to mitigate injuries involved in operational and maintenance activities and ensures that employees or even visitors to all our Facilities and Operating Equipment are protected from the workplace hazards, accustomed with the precautions, and, at the same protecting and preserving the DPWH properties and products. In the same manner, all employees and visitors to our operations are required to familiarize and adhere with these guidelines.

Compliance is strictly enjoined.

ROGELIO L. SINGSON
Secretary

Department of Public Works and Highways
Office of the Secretary
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I. HOT WORK OPERATION AND PERMIT

1.0 Purpose

The purpose of this policy is to provide safety guidelines and procedures for all employees who are engaging in hot work operations or any other similar operations capable of producing heat, sparks, fires or explosions in all DPWH Facilities, Equipment and Properties currently being by the Bureau of Equipment (BOE), Regional Offices – Equipment Management Divisions (EMD), District Engineering Offices (DEO), Project Management Office (PMO), Facilities Maintenance Division (FMD) and Equipment Services Unit (ESU). Such hot work operations include, but are not limited to: torch cutting, arc welding/cutting, oxygen cutting, brazing, grinding, open-flame soldering, oxy-fuel gas welding, hot taps, hot riveting, thawing pipes, heat treating, powder-driven fasteners, torch-applied roofing and cad welding.

2.0 Scope

These procedures are intended to protect lives, health and properties from fire and any products of combustion, which might result from the use of flame or spark-producing equipment. All concerned offices and employees engaged in such hot operations are required to conform to these guidelines.

3.0 Abbreviations, Acronyms and Definition of terms

3.1 Abbreviations/Acronyms

BOE – Bureau of Equipment
DEO – District Engineering Office
EMD – Equipment Management Division
EMMS – Equipment Maintenance and Management Section
ESU – Equipment Services Unit
EOS – Equipment Operations Section
FED – Floating Equipment Division
FMD – Facilities Maintenance Division
HWO – Hot Work Operator
PAI – Permit Authorizing Individual
PMO – Project Management Office

3.2 Definition of Terms

Controlled Area - A work area in which safe conditions for hot work exist or where safe conditions can be created by moving or protecting combustibles. A hot work permit is required in a controlled area.

Fire Watch - Trained personnel in hot work safety that are in attendance during the entire hot work operation and are immediately available to extinguish a fire and monitor the hot work area for changing conditions after hot work is completed.

Hot Work - Any work that involves welding, cutting, brazing, or any other operation that creates sparks, excessive heat or open flames, or that may be considered as a fire hazard.

Hot Work Operator (HWO) - An employee who is qualified and authorized by management to perform hot work such as welding, brazing, soldering, and other associated work tasks.

Hot Work Permit - Permit issued to all work in hazardous or controlled areas, which involves, or may result in, an open flame or the production of a source of ignition.

Permit Authorizing Individual (PAI) - Trained employee who is authorized by the Management to issue a hot work permit prior to hot work operations.

4.0 Roles and Responsibilities

4.1 Supervisor/Safety Officer

i. Ensure that all employees involved in Hot Works are trained in the safe operation of their equipment and the safe use of the process. These individuals must have an awareness of the risks involved and understand the emergency procedures in the event of a fire.
ii. Ensure that all employees involved in Hot Works are familiar with this policy.
iii. Appoint a designated person (PAI) to issue Hot Work permits to cover the work activities.
iv. Conduct periodic assessment to ensure compliance with this policy.
v. Ensure that the policy is reviewed annually and is prevalent with all applicable regulations.
vi. Ensure that only approved equipment, such as torches, manifolds, regulators and pressure reducing valves are used.

4.2 Permit Authorizing Individual

i. Assess the work area, verify Required Precautions Checklist and sign the Hot Work Permit PRIOR and AFTER work.
ii. Post permit at job site or on the equipment and place another copy of permit at the site designated area (i.e. permit board).
iii. Ensure combustibles are protected from ignition by:
    - Moving hot work to a location free of combustible materials.
    - Moving combustible materials to a safe distance (35 feet) away from hot work.
    - Shielding combustibles with materials designed for that purpose.
    - Scheduling hot work for a time when minimal amounts of combustibles are present.
iv. Have a designated Fire Watch during Hot Work. This could be anyone who has been trained as Fire Watch.
v. Ensure Fire Watch is posted at the site when:
    - Hot work is performed in a location where other than a minor fire might develop, or where the following conditions might exist:
    - Combustible materials or contents are within 35 ft from the point of hot work;
    - Combustible materials are beyond 35 ft away but are easily ignited by sparks;
    - Wall or floor openings are within 35 ft and expose combustible materials in adjacent areas. This includes combustible materials concealed in walls or floors;

- Combustible materials are adjacent to the opposite side of partitions, walls, ceilings, or roofs and are likely to be ignited.

vi. Ensure sufficient local exhaust ventilation is provided to prevent accumulation of any smoke or fume.
vii. Ensure hot work permit is updated daily.
viii. Monitor the area for at least 30 minutes after the completion of work. Note monitoring may be conducted by electronic means (e.g. smoke detection)
ix. Document the hot work permit and ensure all guidelines on the permit are followed.
x. Cancel issuance of permit once any of the outlined required precautions have not been observed.

4.3 Employees performing hot work (HWO)

i. Secure a Hot Work permit prior to performing the work.
ii. Responsible for complying with all rules and regulations concerning safe work practices and procedures and all requirements stated in the permit.
iii. Ensure that combustible materials are not in the vicinity of the work.
iv. Safely handle hot work equipment so as not to endanger lives and property.
v. Stop work immediately should unsafe conditions develop.
vi. Follow all precautions outlined in the issued permit and follow this policy.

4.4 Fire Watch

i. Watch for fires, smoldering materials or other signs of combustion and understand the inherent hazards of the work site.
ii. Understand the basic hazards associated with hot work.
iii. Ensure that safe conditions are maintained during hot work operations.
iv. Have authority to stop the hot work operations if unsafe conditions develop.
v. Have fire extinguishing equipment readily and immediately available, and trained in its use.
vi. Extinguish fires when fires are obviously within the capacity of the equipment available. If the fire is beyond the capacity of the equipment, sound the alarm immediately.
vii. Be familiar with the facilities and procedures in sounding an alarm and activate emergency response in the event of a fire.
viii. Retain for at least ½ hour or longer as instructed by the PAI after completion of hot work operations in order to detect and extinguish smoldering fires. More than one fire watch shall be required if combustible materials that could be ignited by the hot work operation cannot be directly observed by a single fire watch (e.g. in adjacent rooms where hot work is done on a common wall). Remain at post for the prescribed period, including through breaks and lunches, where applicable.
ix. Fire Watch cannot do any other job duties while performing fire watch.
x. Fire watch does not have to be limited to perform other duties, however he may not leave the area of hot work and his primary duty must be detection and prevention of fires: *Example: A welder and his helper – the helper can assist the welder, but may not leave the area to get supplies unless the welder stops and performs the duties*
xi. Assist Hot Work Operator in the preparation and clean-up of Hot Work area.

5.0 Hot Work Permit Procedures

Personnel engaged in hot work must be authorized to do so by the Safety Officer who understands the hazards and what government properties might be affected by the hot work.

5.1 Request a Hot Work Permit (See Appendix A – Hot Work Permit) from the:
- Facility, Safety and Environmental Management Unit Chief for the Equipment Maintenance and Management Section (EMMS)
- Dredgemaster for the Floating Equipment Division (FED)
- EOS Chief for Base Shop
- Area Engineer for Area Shop
- ESU Engineer for DEO Equipment Bay and Motorpool
- Unit Head for Building and Facilities Maintenance Section under Facilities Maintenance Division (FMD)
- Project Manager for PMO Flood Control Projects , Navigational Flood Gate at KAMANAVA, Navotas City, Metro Manila and Manggahan-Napindan, Pasig City

5.2 Complete the Hot Work Permit.

5.3 The Hot Work Permit must be signed by the PAI including the expiration of the permit and the time the hot work commenced. Produce a copy.

5.4 The Required Precautions Checklist noted in the permit and in this policy must be in effect before starting the hot work.

5.5 Post the Hot Work Permit in the hot work area or on the equipment.

5.6 The PAI must indicate the time the hot work has been completed. Fire watch must sign the permit.

5.7 Submit hot work permit to Safety Officer for documentation.

6.0 Program Activities

6.1 Pre-Hot Work Check

Before hot work operations begin, a completed hot work permit is required. The permit is to be completed 8 hours prior to the start of the work (exceptions made on an emergency basis) and is valid for one (1) day and one area, and should be posted in the area of hot work for the duration of the activity.

The checklist below must be accomplished by the Supervisor and/or PAI before permitting hot work to commence:

REQUIRED PRECAUTIONS CHECKLIST

- Available sprinklers, hose streams and extinguishers are accessible and serviceable.
- Hot Work equipment in good repair.

Requirements within 35 feet (11 meters) of work

- Flammable liquids, dust, lint and oily deposits removed.
- Explosive atmosphere in area eliminated.
- Floors swept clean.

- Combustible floors wet down, covered with damp sand or fire-resistive sheets.
- Remove other combustibles where possible. Otherwise protect with fire-resistive tarpaulins or metal shields.
- All wall and floor openings covered.
- Fire-resistive tarpaulins suspended beneath work.
- Protect or shut down ducts and conveyors that might carry sparks to distant combustibles.

Work on walls, ceilings or roof

- Construction is noncombustible and without combustible covering or insulation.
- Combustibles on other side of walls, ceilings or roofs are moved away.

Work on enclosed equipment

- Enclosed equipment cleaned of all combustibles.
- Containers purged of flammable liquids/vapors.
- Pressurized vessels, piping and equipment removed from service, isolated and vented.

6.2 Prohibitions

Hot work shall not be permitted in the following areas until the conditions prohibiting hot work have been modified:

- In the presence of explosive atmospheres, or in situations where explosive atmospheres may develop inside contaminated or improperly prepared tanks or equipment which previously contained flammable liquids;
- In areas with an accumulation of combustible debris, dust, lint and oily deposits;
- In areas near the storage of exposed, readily ignitable materials;
- On a container such as a barrel, drum or tank that contained materials that will emit toxic gases or vapors when heated; and
- In a confined space, until the space has been inspected and determined to be safe.

- Hot work shall not be attempted on:
  - A partition, wall, ceiling or roof that has a combustible covering or insulation, or on walls or partitions of combustible sandwich-type panel construction.
  - Pipes or other metal that is in contact with combustible walls, partitions or roofs shall not be done if the work is close enough to cause ignition by conduction.
- The person issuing the permit or the employee performing the work believes that the issuing of a permit would or could result in undue hazards of any nature.

6.3 Personal Protective Equipment

The personnel who will perform Hot Work shall be equipped with protective devices and/or apparel as indicated below:

- Gloves, apron and/or jacket that are made of a material that is an insulator from heat and electricity;
- Welders' helmets equipped with proper filter plate and cover lenses.
- Respiratory protection
- Screens to protect persons not properly protected from the visual effects of viewing arc welding or cutting and during gas or oxygen cutting or welding.
- Lifelines and harnesses for work in confined spaces and water based equipment.
- All persons directly assisting in hot work operations shall be provided with gloves, goggles or other protective clothing, as may be necessary.[1]

6.4 Fire Watch

A fire watch shall also be required in the following instances:

- All oxy-acetylene welding and cutting activities.
- Other welding activities where the operator wears eye-protection for welding. The eye protection will impair the operator's ability to see/detect when something may ignite.

6.5 Work Closeout:

- A fire watch shall be maintained for at least 30 minutes after the completion of hot work operations in order to detect and extinguish smoldering fires.
- The PAI shall inspect the job site for at least 30 minutes following completion of hot work and close out permit with the time and date of final check.

6.6 Designated Hot Work Rooms

A designated hot work room is a permanent location designed for hot work. These rooms do not require a permit to perform hot work. For a room to be classified as a designated hot work room, it must meet the following requirements:

- It must be of noncombustible fire-resistant construction, essentially free of combustible and flammable materials;
- It must be suitably segregated from adjacent areas;
- It must be equipped with fire extinguishers.

7.0 Hot Work Permit Coverage

The following activities are required to obtain a Hot Work Permit prior to start and shall be issued and approved by the responsible individuals from the offices listed on Section 5.1:

a. Work involving naked flames (Welding, Cutting, Grinding)
b. Electric welding
c. Induction pre-heating/stress relieving and high temperature calibration
d. Use of heat shrink blowers and electric drills
e. Opening of live junction boxes in hazardous areas
f. Use of air/hydraulic powered tools
g. Operation of internal combustion Engines

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[1] Occupational Safety and Health Standards, Rule 1100.02

8.0 Permit Posting and Recordkeeping

The hot work permit shall be posted on a safety bulletin board within the hot work site or on the hot work equipment. Once the hot work is complete, copies shall be maintained by the PAI for one year after work has been completed with a second copy sent to Safety Officer.

II. LOCK-OUT – TAG-OUT (LOTO)

1.0 Purpose

The purpose of this procedure is to provide concerned Offices and employees regarding safe work practices necessary for lockout and tag-out (LOTO). Lockout/Tag-out is a safety procedure to ensure that machines or equipment are properly shut off or disabled prior to servicing and/or maintenance works. A tag is required to be affixed to the locked equipment indicating that it should not be turned on.

2.0 Scope

This procedure is intended to protect affected employees that are exposed to electrical hazards while working on, near or with systems that use electrical energy and other energy sources that may incur injuries, accidental or inadvertent operations or any serious damages to lives. All concerned offices and personnel shall comply with this procedure.

3.0 Definition of terms

Affected employees - Personnel who may be affected by work near the equipment which is to be locked or tagged out. They are not permitted to perform servicing and/or maintenance works.

Authorized employees - Personnel who are permitted to do servicing or maintenance works. They perform the lockout/tag-out.

Energy Isolating Device - A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

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

Lockout/Tag-out - Safety procedure requiring hazardous power sources to be isolated prior to any maintenance or repair works. It requires a lock and a tag.

Servicing and/or maintenance - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines 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.

4.0 Lockout/Tag-out Preparation and Procedure

4.1 Preparation

Authorized employees to perform lockout/tagout must be certain as to which switch, valve or other energy isolating devices apply to the equipment to be locked out. More than one energy source may be involved. Any questionable identification of sources shall be cleared by the employees with their supervisors. Job authorization should be obtained before lockout commences. Obtain Lockout/Tagout tag (See Appendix B – Lockout/Tagout Tag) from:

- Facility, Safety and Environmental Management Unit Chief for the EMMS
- Dredgemaster for the FED
- EOS Chief for Base Shop
- Area Engineer for Area Shop
- ESU Engineer for DEO Equipment Bay and Motorpool
- Unit Head for Building and Facilities Maintenance Section under Facilities Maintenance Division (FMD)
- Project Manager for PMO Flood Control Projects, Navigational Flood Gate at KAMANAVA, Navotas City, Metro Manila and Manggahan-Napindan, Pasig City

4.2 Procedure

4.2.1 Identify the types of energy sources used, potential hazards and all control devices.

4.2.2 Notify all affected employees that a lockout is required and the reason therefor.

4.2.3 If the equipment is operating, shut it down by the normal stopping procedure. Operate the switch, valve or other energy isolating devices so that the energy source(s) is disconnected or isolated from the equipment.

4.2.4 Isolate all energy sources by grounding, repositioning, blocking, bleeding and venting stored energy as found in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam or water pressure.

4.2.5 Lockout energy isolating devices with an assigned individual lock.

4.2.6 After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.
CAUTION: Return operating controls to neutral position after the test.

4.2.7 Perform required task.

4.2.8 When the job is complete and equipment is ready for testing or normal service, check the equipment area to see that no one is exposed.

4.2.9 When equipment is clear and all affected employees have been notified, remove lockout. Each lockout device must be removed by the person who put it on.

4.3 Procedure Involving More Than One Person[2]

If more than one individual is required to lockout equipment, each should place his/her own personal lock on the energy isolating device(s). One designated individual of a work crew or a supervisor, with the knowledge of the crew, may lock out equipment for the whole crew. In such cases, it may be the responsibility of the individual to carry out all steps of the lockout procedure and inform the crew when it is safe to work on the equipment. Additionally, the designated individual shall not remove a crew lock until it has been verified that all individuals are clear.

5.0 Usage of Lockout/Tag-out Device

- When service or maintenance is being performed on or around any equipment where injury could result from unexpected start-up or release of stored energy
- When new equipment or machinery is being installed
- When a guard or other safety device must be bypassed or removed
- When an employee must place any part of his body where it could be caught by moving machinery

6.0 Signing of Tag

The individual designated to lock the equipment must sign the tag including the date, time and the date the equipment is expected to be completely ready for testing or normal service.

7.0 Documentation

After completing the job, the individual who performed lockout/tag-out must document the job in a logbook designated for lockout/tag-out including date and time the job commenced and when the job was completed, and person responsible for lockout/tag-out.

ANNEX

The following pages pertain to the following:

- Annex A – Hot Work Permit (Actual Size, back to back)
- Annex B – Lockout/Tagout Tag (Actual Size, back to back)

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[2] https://www.dir.ca.gov/dosh/etools/08-003/P08-00301B.pdf

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HOT WORK PERMIT

The Permit Authorizing Individual (PAI), in issuing this permit, certifies that all safety factors have been considered and cared for satisfactorily.

Return this permit upon completion of the job which it is to cover to the authorizing supervisor. The PAI will write "COMPLETE", date and intial across the face of the permit.

LOCATION OF HOT WORK:

_____

WORK TO BE DONE:

_____

NAME/S OF PERSON/S DOING HOT WORK:

_____

	YES	NO	N/A
1 Read the Hot Work Permit Procedure			
2 Work area and equipment has been made free of flammable, combustible, and hazardous materials.			
3 Gas Test taken			
4 Is a fire extinguisher on the job?			
5 Lines disconnected and/or blanked?			
6 Is a Fire Watch provided?			
7 Adjoining equipment and operations considered ok from standpoint of possible effect on the job			
8 Other necessary precautions SPECIFY			

APPROVAL

I have personally checked the location, conditions and precautions necessary, and permission is authorized for this work.

APPROVED BY _____ DATE _____ TIME _____

PERMIT EXPIRES	DATE	TIME
TIME STARTED	TIME FINISHED	

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HOT WORK PERMIT

DO NOT REMOVE THIS TAG!

TO DO SO WITHOUT AUTHORITY WILL MEAN DISCIPLINARY ACTION

IT IS HERE FOR A PURPOSE

REMARKS: _____

_____

_____

IN CASE OF EMERGENCY:

CALL: _____

AT: _____

_____

FIRE WATCH RECORD

Checked by (initials)	Date	Time	Checked by (initials)	Date	Time

SEE OTHER SIDE

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DANGER

DO NOT OPERATE

EQUIPMENT LOCK-OUT

TAG AND LOCK TO BE REMOVED ONLY BY:

NAME: _____

DATE: _____ TIME: _____

EXPECTED COMPLETION: _____

BOE-14355-01 Rev00

DANGER

DO NOT OPERATE

EQUIPMENT LOCK-OUT

TAG AND LOCK TO BE REMOVED ONLY BY:

NAME: _____

DATE: _____ TIME: _____

EXPECTED COMPLETION: _____