Welcome to *The Hard Hat Training Series*

Welcome to The Hard Hat Training Series. Today, you will be trained on the safe operation, handling, care, and proper function of a Horizontal Directional Drill.

HARD HAT TRAINING SERIES

SAFETY PROVISIONS, inc.

DIRECTIONAL DRILL OPERATOR SAFETY TRAINING

Introduction

In today's training, you will learn how to perform a pre-operational inspection of the directional drill, how to operate the drill in a safe productive manner, and how to keep others safe while operating the drill through recognizing potential hazards.

No matter the brand or size of the directional drill, they all share common characteristics that help them control the direction and destination of the drill head. They all do this through a means of drilling underground to a predetermined target.

Directional drills have the appearance of only performing one task: drilling into the ground. However, this one task can save time and money for many industries. Some of those jobs include, but are not limited to gas and oil, cable installation, underground pipes, and sewer systems.

The complexity of these machines can make specific training somewhat difficult. The goal today is to focus on general safety principles and provide information that will increase your knowledge, make you a better operator, and to keep you, as well as those around you, safe.

During this training, we will take a look at the functionality and components of a directional drill. We will also discuss why it's important to conduct a thorough pre-shift inspection at the beginning of every shift.

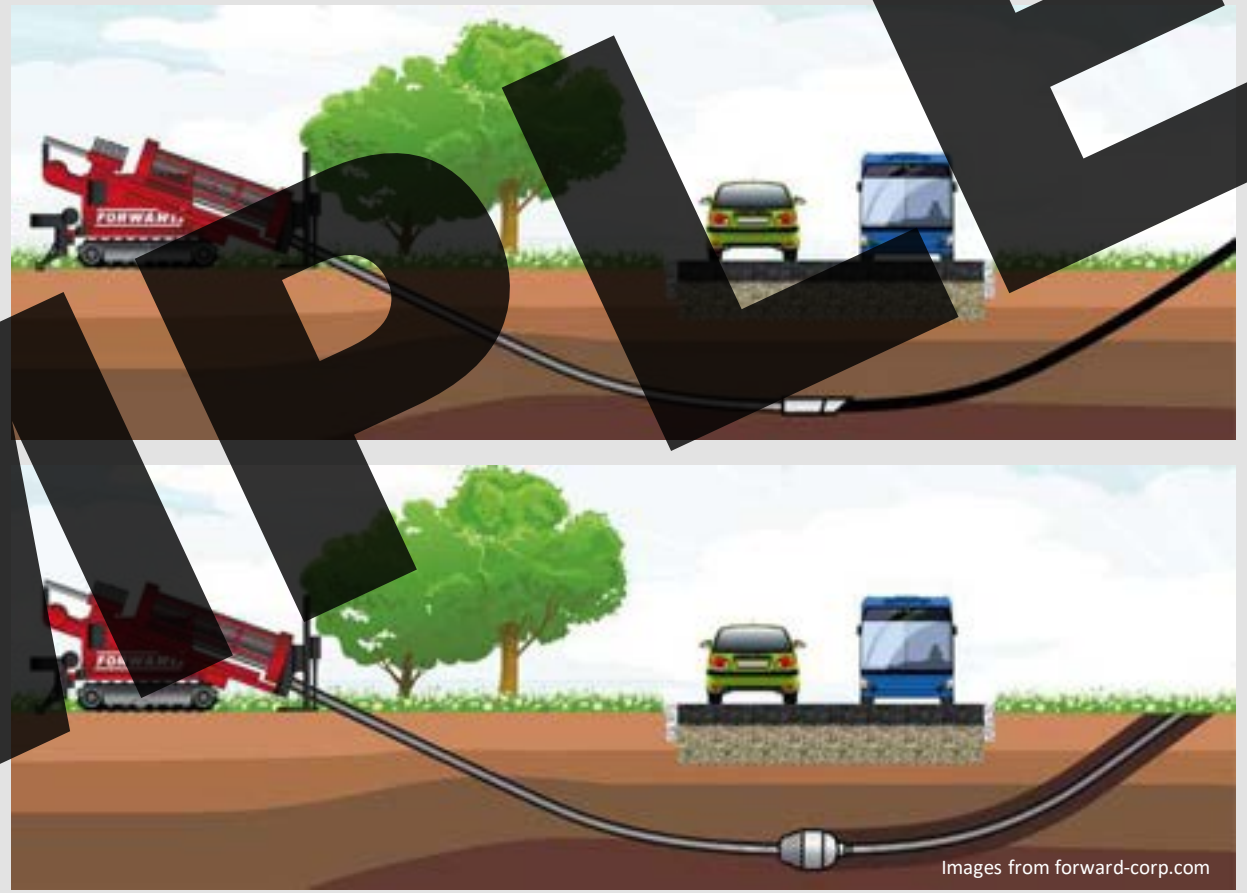
We will also emphasize the importance of planning each job and setting up the machine and site properly so as to avoid hazards and obstacles around the worksite.

Lastly, we will also touch on some of the more common hazards associated with the directional drill and discuss how to recognize, minimize, and prevent them.

By the time you complete this training, you will be better prepared to safely operate a directional drill. You will be more familiar with the equipment, have an increased knowledge of how to set up and safely operate it, and be able to recognize and avoid the most common hazards associated with their use.

Definition

Horizontal directional drilling is a steerable, trenchless installation method, often used for pipeline, cables, and conduit. A drill head is guided along a pre-determined path to a desired area by an operator at the operator's station on the drill. Whether that area is towards water, oil, or just to a patch of land on the other side of some trees, the directional drill will be able to get you there.



Images from forward-corp.com

Directional drills are often chosen when typical open cut excavations are not a feasible option. Environmental and constructability issues sometimes lead to directional drills being chosen for the job. They allow you to drill under roads, bodies of water, airport runways, and various other obstacles without disturbing the ground surface like you would in a traditional trenching method.

Drill Sizes

The size of drill you use on site can vary significantly based on the scope of the project. The drilling process will be alike, but the capabilities of drill rigs will vary greatly. Drill rig sizes are broken into three categories:

- Small Rigs
- Medium Rigs
- Large Rigs


Image from youtube.com

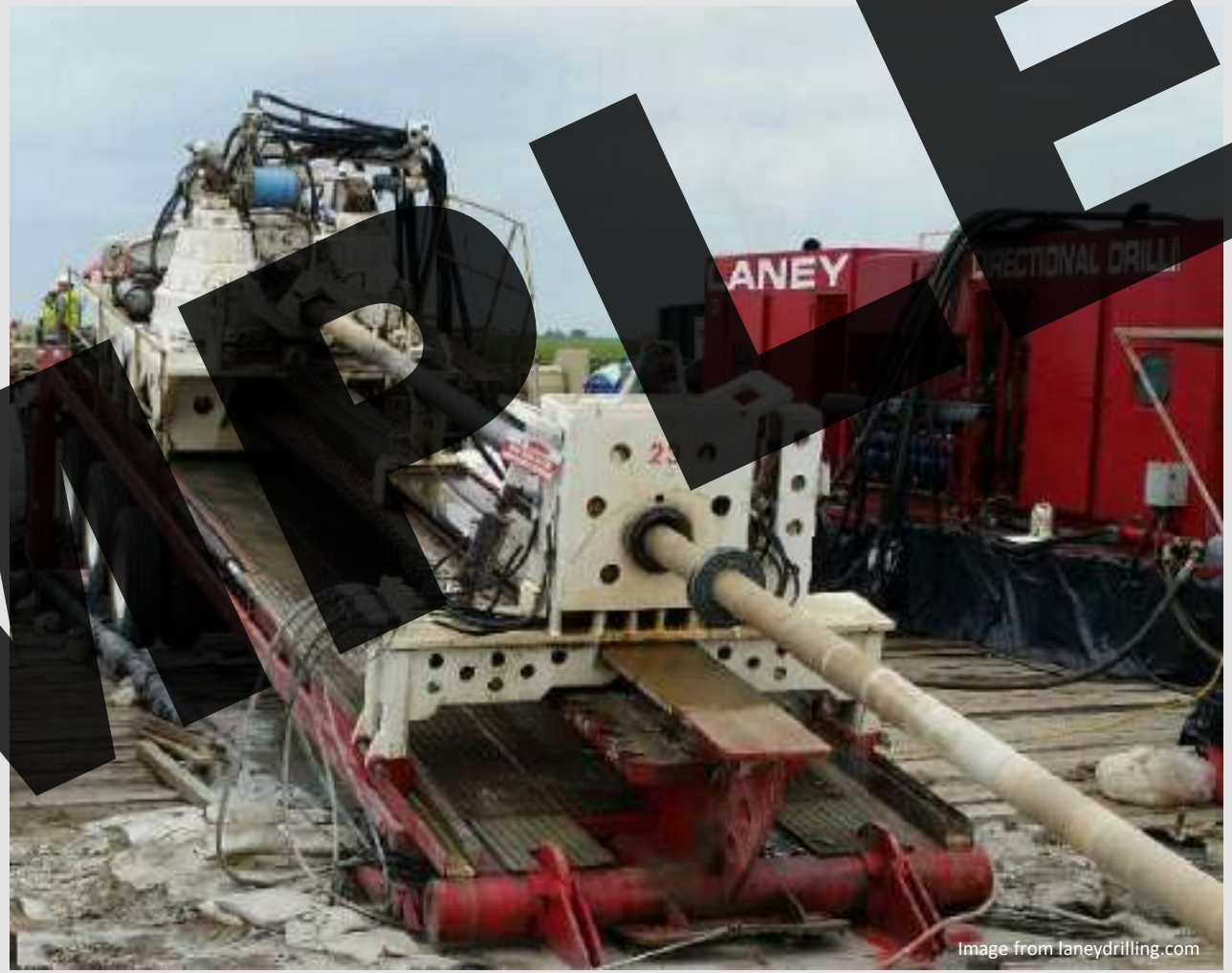


Image from laneydrilling.com

Small Rigs

Small rigs are defined as drills with less than 40,000 pounds of thrust/pullback. These drill rigs are generally designed for shallow installation and are ideal for jobs in congested residential areas. Small rigs are often chosen when drilling for small diameter pipe and installation of utility cable.

Image from forconstructionpros.com

Medium Rigs

Medium rigs are defined as drills that range from 40,000 pounds to 100,000 pounds of thrust/pullback. Medium drill rigs can install conduit and pipe up to 16 inches in diameter and distances up to 2000 feet. Due to their compact size and strength, they are often chosen for municipal pipeline installation and are suitable for drilling under highways, rivers, and other obstacles.

Large Rigs

Large rigs are defined as drills with greater than 100,000 pounds of thrust/pullback. They are typically found on trailer mounted supports and require substantial mobilization periods (anywhere from one to two weeks). Large rigs are used when pipe installation products range in size from 16 inches to 18 inches, and cover distances up to 6,500 feet.


Image from uconline.com


Image from Vermeer.com

Regardless of the size of drill you are using, always make sure you take sufficient time to read through the operator's manual prior to operating the drill. The machines may essentially perform the same tasks, but the controls will be different. Being more familiar with your drill will help you to become a safer and more productive operator.

Perhaps more than any other piece of equipment, the directional drill controls can vary from brand to brand. If you've always operated a Ditch Witch, then are asked to operate a Vermeer, or vice versa, you will most likely need to receive and document additional training regarding the specifics of each operation.

Training/Standards

Anyone who operates heavy equipment must receive training prior to operating the machine on their own. Requirements for refresher training are also very specific.

Did you know?

Regulations specify that an operator *must* take a refresher course if any of the following apply:

- The operator is observed operating the equipment in an **unsafe** manner (e.g., no seat belt, reckless driving, etc.)
- The operator is involved in an **accident *or*** a **near miss**
- The operator received a **poor evaluation** for performance
- The operator is required to **use a different type of machine *or* attachment**
- Workplace conditions have changed

Additionally, regulations state that it is the employer who is responsible to determine the frequency of refresher training.

The same goes for attachments or accessories (eg, bits, reamers) and changes in work site conditions. For instance, if you've always operated on a side road with limited traffic, but are then asked to operate along a busy road, additional training might also be required.

OSHA®

OSHA's standard for directional drills says that each operator must be re-evaluated every three years to see if they are still competent to operate the equipment. Best practices applies this rule to all types of equipment. A so-called "free-pass" cannot be awarded based on experience, age, or time on the job. The extent of the evaluation is to be determined by the employer, but should include a written and practical examination that prove continued competency.

Initial training, as well as any evaluations or refresher courses must be documented with the name of the person or persons who taught the class or conducted the evaluation. Although OSHA doesn't require wallet cards as proof of training, many companies and worksites do require onsite proof that you have been trained. At the very least, in the case of an investigation, OSHA will want to see proof of proper and consistent training (in the way of training outlines, class lists, training goals, tests, certificates, etc.)

STANDARDS

OSHA

ANSI

ASME

29 CFR 1926.600 Equipment
29 CFR 1926 Subpart P - Excavations
29 CFR 1926 Subpart W - Rollover Protective Structures
29 CFR 1926.20, General Safety and Health Provisions, training
29 CFR 1926.21, Training and Education
OSHA Act of 1970, 5(a)(1): *"each employer shall furnish to each of his employees...a place of employment which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."*

These are some of the main standards concerning directional drills and the responsibility of properly training employees. Many states have additional standards, as do some industries. It is your responsibility to know all federal, state, local and any company rules that apply to your machine and jobsite.

Equipment operators also share in the responsibility to ensure that they and their co-workers have:

- Received training by a qualified person.
- Read and understood the manufacturer's operating instructions and safety rules as found in the operator's manual.
- Read and understood all decals, warnings, and capacity plates on the machine and attachments.
- Performed a thorough pre-shift inspection each day prior to operating the machine.

Anatomy & Components