HEAVY EQUIPMENT

Test Code: 7572
Version: 01

Specific Competencies and Skills Tested in this Assessment:

Orientation, Safety, and Security
- Explain the appropriate safety dress code for a construction worker on the job site
- Explain the role safety plays in the construction crafts and describe job-site safety
- Explain the appropriate safety precautions around common job-site hazards
- Explain importance of HAZ COM requirement and MSDS
- Describe fire prevention and fire-fighting techniques
- Describe what OSHA is and what part it plays in job-site safety
- Practice safe equipment transportation on public roads and job sites
- Practice job-site safety, prevention of slip and fall and pinch-point accidents and electrocutions
- Identify the main risk and safety factors involved in trenching
- Identify blind spots on and around heavy equipment and importance to the highway inspector
- Define why it is important for all equipment to be secured after working hours

Introduction to Plans, Specs, and Terminology
- Describe what specifications are
- Describe what a right-of-way is
- Match terms associated with soil to the correct definitions
- Select from a list types of compacting equipment
- Name the basic soil stabilization methods
- Define terms associated with basic earth moving operations
- Layout an earthmoving operation given the basic information and general requirements
- Describe various methods for keeping construction sites well drained
- Describe erosion and sedimentation control measures

Introduction to Good Communication Skills
- Demonstrate how to properly fill out a job application
- Describe how to conduct yourself during a job interview
- Demonstrate how to research information for potential career
- Develop a 5-year plan for potential career and or education advancement
**Heavy Equipment continued**

**Introduction to Hand and Power Tools**
Describe the basic procedures for taking care of these tools
Recognize and identify some of the commonly used power tools in the construction trade

**Basic Rigging**
Identify and describe the use of slings and common rigging hardware
Describe the basic hitch configurations and their proper connections
Describe the basic load-handling safety practices
Demonstrate proper use of American National Standards Institute (ANSI) hand signals
Describe basic safety precautions taken into consideration while operating a fork lift

**Fundamentals of Service**
Demonstrate how to research technical information in service, parts and operation manuals
Describe the operation of a hand held grease gun

**Equipment Preventative Maintenance**
Recite the preventive maintenance responsibilities of the operator
Specify the basic equipment subsystems
Identify sources of engine oil contamination
List safety tips when working on a cooling system
Properly jump-start vehicles equipped with either 12-volt or 12- to 24-volt electrical systems
Explain the basic principles of hydraulics
Explain hazards associated with hydraulic systems
List safety tips when working on or around tires and rims

**Introduction to Understanding Surveying and Grades**
Identify equipment used by the operator to check stakes and grades
State the meaning of slope ratio
Calculate cuts and fills using an engineer’s rule and hand level
Define terms associated with plan reading, grade setting, and drainage

**Articulated Dump**
List all safety devices used on the articulating dump
Explain warning controls and their functions
Identify risks and safety factors involved in transporting and dumping articulating dump load
Demonstrate the proper pre-start and post-start check of a articulating dump
Identify the basic components of a articulating dump
Demonstrate positioning the truck for a safe dumping condition

**Skid Steer Loaders**
List all safety devices used on the skid steer loader
Demonstrate removing and installing the bucket and/or attachment
Excavate material to build a stockpile of material
Demonstrate load and carry operations
Demonstrate bank loading
Demonstrate proper loading techniques
**Heavy Equipment continued**

**Backhoe Loaders**
- State safety rules for operating a backhoe loader
- Identify basic components of a backhoe loader
- List the attachment used on backhoe loaders
- Demonstrate removing and installing backhoe bucket
- Excavate a trench with a level bottom
- Demonstrate loading techniques with the backhoe bucket
- Excavate material with loader bucket to build a pile
- Demonstrate load and carry operations
- Change bucket teeth
- Backfill a trench with the loader and/or backhoe buckets
- Demonstrate machine repositioning techniques while using the backhoe

**Bulldozers**
- State safety rules for operating a bulldozer
- Identify basic components of a bulldozer
- Check and adjust track tension
- Demonstrate forming a stockpile
- Demonstrate cut and carry dozing
- Demonstrate cutting a road into a side hill
- Demonstrate cutting a road into a side hill
- Demonstrate spreading material from point “A” to point “B”
- Demonstrate spreading material into 6” layers
- Demonstrate slot dozing

**Crawler Loaders**
- Identify basic components of a crawler loader
- Change bucket teeth
- Check and adjust track tension
- Demonstrate loading from a stockpile into a dump truck
- Excavate a cellar to specifications
- Demonstrate cutting a road into a side hill
- Demonstrate spreading material in 6” lifts or layers

**Wheel Loaders**
- State safety rules for operating a wheel loader
- Describe the accessories used on wheel loaders
- Perform preventative maintenance according to manufacturer’s recommendations
- Demonstrate moving and parking the machine safely
- Demonstrate bank loading into dump truck
- Demonstrate loading from a stockpile into a dump truck
- Demonstrate forming a stockpile
- Demonstrate load and carry operations
- Demonstrate spreading material in 6” layer
**Heavy Equipment continued**

**Excavators**
State safety rules for operating an excavator  
Identify the basic components of an excavator  
Perform preventative maintenance according to manufacturer’s recommendations  
Demonstrate the proper pre-start and post-start check of an excavator  
Start the engine and demonstrate engine warm-up and shutdown procedures  
Demonstrate removing, installing, and adjusting bucket  
Check and adjust track tension  
Demonstrate moving concrete barriers and structures  
Demonstrate placing objects in specified areas with an excavator bucket within specified time limit  
Demonstrate loading a dump truck  
Demonstrate excavating a trench 10 feet deep, 50 feet long according to OSHA standards then backfilling  
Demonstrate a counter rotational turn while holding the upper structure in 1 position
Heavy Equipment continued

Written Assessment:

Administration Time: 3 hours
Number of Questions: 241

Areas Covered:

12% Orientation, Safety, and Security
7% Introduction to Plans, Specs, and Terminology
1% Introduction to Good Communication Skills
2% Introduction to Hand and Power Tools
5% Basic Rigging
2% Fundamentals of Service
14% Equipment Preventative Maintenance
12% Introduction to Understanding Surveying and Grades
5% Articulated Dump Trucks
4% Skid Steer Loaders
9% Backhoe Loaders
7% Bulldozers
4% Crawler Loaders
7% Wheel Loaders
9% Excavators

Sample Questions:

What is the minimum distance spoil can be placed from any trench wall?
A. 2 feet
B. 3 feet
C. 4 feet
D. 5 feet

Which tool is best suited for cutting pipe?
A. cut off saw
B. chain saw
C. reciprocating saw
D. jig saw

Relief valves protect the hydraulic system from
A. over-pressurizing
B. over-speeding
C. under-pressurizing
D. under-speeding

When dumping material on a pile, the loader should be raised
A. to full height
B. to 3/4 height
C. only as high as required
D. to 7/8 height

An excavator attachment that can be used for lifting logs is a
A. blade
B. ripper
C. grapple
D. hammer
Heavy Equipment continued

Performance Assessment:

Administration Time: 2 hours and 25 minutes
Number of Jobs: 5

Areas Covered:

24%  
**Dig a Flat Bottom Trench Using a Backhoe**
Inspect for proper personal protective equipment and work attire, perform pre-operational inspection, enter the machine, travel to work area, parking machine, set up machine for digging, digging process, reposition machine, transport back to staging area, overall appearance and accuracy.

12%  
**Perform a Pre-Operational Inspection on a Skid Steer Loader; Identify Lubrication Points and Lubricate a Grease Fitting**
Inspect for proper personal protective equipment and work attire, perform pre-operational inspection, identification of the problem, accurately point out 10 points of lubrication, grease fitting.

17%  
**Properly Set Up a Laser and Determine Elevations at 4 Grade Stakes Off of a Benchmark**
Inspect for proper personal protective equipment and work attire, set up laser and tripod, take reading at benchmark, establish height of instrument, obtain readings at stake locations, determine elevations of stake locations, correctly determine cut of fill requirements, correctly determine amount of cut or fill required, stored laser and tripod properly.

27%  
**Back Fill Trench and Grade with a Dozer**
Inspect for proper personal protective equipment and work attire, perform pre-operational inspection, enter the machine, travel to work area, parking machine, inspect area, backfill the excavation process, grade area, transport back to staging area, park and shut down, backfill and grade quality.

20%  
**Load a Haul Unit with a Wheel or Crawler Loader**
Inspect for proper personal protective equipment and work attire, perform pre-operational inspection, enter the machine, travel to work area, parking machine, inspect loading area for hazards and terrain conditions, obtain a bucket of material, travel from pile to loading area, spot haul unit, load haul unit, release haul unit, maintain loading area, transport back to staging area, park and shut down.

Sample Job: Back Fill Trench and Grade with a Dozer

Maximum Job Time: 25 minutes

Participant Activity: The participant will perform a pre-operation inspection of the equipment and area. Backfill and grade an excavation designated by the evaluator.