ATOE-2660: GRADER SAFETY

Cuyahoga Community College

Viewing: ATOE-2660 : Grader Safety

Board of Trustees:
2001-03-22

Academic Term:
Spring 2019

Subject Code
ATOE - Appd Ind Tech-Operating Engin.

Course Number:
2660

Title:
Grader Safety

Catalog Description:
Application of safety operations of graders. Topics include reading warning signs and labels, avoiding general hazards, monitoring systems and cab features, operation techniques and towing.

Credit Hour(s):
2

Lecture Hour(s):
2

Requisites

Prerequisite and Corequisite
ATOE-1650 Graders and Plans, or ATOE-2640 Advanced Grader Practice or concurrent enrollment; or departmental approval.

Outcomes

Course Outcome(s):
N/A

Objective(s):
1. 1. Describe safety warnings.
2. 2. Explain the fundamental terms and definition of grader operation.
3. 3. Define proper pre- and post-operations check.
4. 4. Apply procedures of safety operations.
5. 5. Explain basic operating techniques.
6. 6. Discuss normal jobsite layout.
7. 7. Identify various grader operations.
8. 8. Explain appropriate techniques for making a ditch.
9. 9. Explain methods of finish grading.
10. 10. Define safe operation techniques on a slope.

Methods of Evaluation:
1. Quizzes
2. Exams
3. Classroom participation

Course Content Outline:

1. Important safety information
    a. Warning signs and labels
        i. Accidents
        ii. hazard signs-"safety alert symbol"
        iii. "signal word"
        iv. location of warnings alert signs
        v. replacement of damaged or missing label
    b. General hazard information
        i. maintenance performance of machine
        ii. pressure air
        iii. fluid penetration
        iv. asbestos information
        v. crushing or cutting prevention
        vi. burn prevention
        vii. oils
        viii. batteries
        ix. fire or explosion prevention
        x. fire extinguisher
        xi. ether
        xii. lines, tubes and hoses
        xiii. tire information
        xiv. mounting and dismounting
        xv. secondary exits
    c. Asbestos information
    d. Pre-check inspection - safety operation procedures
        i. before starting the engine
        ii. starting the engine
        iii. before operating machine
        iv. machine operations
        v. parking machine
2. Monitoring systems and cab features
    a. Battery disconnect switch
        i. Electronic Monitoring System (EMS)
        ii. action light
        iii. EMS functional test
        iv. EMS warning categories
            1. warning category
            2. warning category
                a. coolant temperature
                b. transmission electrical fault
                c. hydraulic oil temperature
            3. warning category
                a. supplemental steering light
                b. engine oil pressure
                c. brake air pressure
                d. parking brake
    b. Gauges
        i. engine coolant temperature
        ii. articulation indicator
        iii. fuel level
        iv. air pressure
        v. service meter
    c. Indicators
    d. Light switches
    e. Panel dimmer switches
    f. Windshield wiper/washer switches
    g. Horn

   h. Backup alarm
   i. Heating and air conditioning controls (if equipped)
   j. Temperature variable controls
   k. Heating and air conditioning system operation
      i. Heating
      ii. Cooling
      iii. Pressurizing
      iv. Defogging
   l. Defrost fans (equipped)
      i. front defrost fan (1)
      ii. rear defrost fan (2)
   m. Seat/seat adjustment
      i. seat belt adjustment
      ii. seat belt release
      iii. seat belt extension
      iv. mirrors
   n. Machine controls
      i. parking brake
      ii. parking brake engaged
      iii. parking brake disengaged
   o. Service brake pedal
   p. Transmission modulator pedal
   q. Accelerator pedal
   r. Decelerator pedal
   s. Throttle control
   t. Transmission direction and speed control
   u. Differential lock
   v. Steering controls
   w. Equipment controls
   x. Before starting the engine
      i. mounting the machine
      ii. machine walk-around inspection
      iii. seat and seat belt checks
   y. Engine starting
      i. above 0°C (32+°F)
      ii. below 0°C (32+°F)
      iii. with jumper cables
   z. Machine operation
      i. parking brake system
      ii. supplemental steering
3. Operation techniques
   a. Operating information
   b. Changing speed and direction
   c. Road building
4. Towing information

Resources

Clemmens, J. P. *Production Efficiency Study on Rubber-Tired Scrapers.* Arlington. U.S.D.O.T. Federal Highway Administration Region 15 Demonstration Projects Division, 1977.

Ringwald, Richard C. *Means Heavy Construction Handbook: A Practical Guide to Estimating And Accounting Methods, Operations/ Equipment Requirements, Hazardous Site Evaluation.* Kingston, R.S. Means Co., 1993.

Nunnally, S. W. *Managing Construction Equipment.* Englewood Cliffs, NJ: Prentice-Hall, 1997.

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