CALIFORNIA APPRENTICESHIP COUNCIL

OPERATING ENGINEER ADVISORY COMMITTEE

MINIMUM INDUSTRY TRAINING CRITERA

DOT CODES:

CONSTRUCTION EQUIPMENT OPERATOR	**859.683 010**
HEAVY DUTY REPAIRER	**620.261 022**
PLANT OPERATOR	**570.682 014**
CONSTRUCTION INSPECTOR	**182.267 010**
ROCK, SAND & GRAVEL	**859.683 01K**
DREDGE	**850.663 010**

OPERATING ENGINEER
MINIMUM TRAINING CRITERIA

1. LENGTH OF TRAINING

Program sponsors shall establish a minimum four-year program of not less than 6,000 hours on-the-job training

2. ON THE JOB

Apprentices shall receive the minimum on-the-job training objectives described in Exhibit "A."

3. RELATED AND SUPPLEMENTAL INSTRUCTION

The required prescribed courses of related and supplemental instruction shall be no less than 144 hours per year. This instruction must include at a minimum, the related and supplemental training processes listed in Exhibit "B"

4. COMPETENCY TESTING

All apprentices must pass minimum level competency tests for all related and supplemental courses before advancement to journeyman status.

5. COMPLETION PERCENTAGES

Program sponsors must have a 60 % graduation rate for all apprentices that satisfactorily complete the program's probationary period

6. REVISONS

The schedule for revisions to the Operating Engineers Industry training criteria shall be in accordance with Labor Code Section 212.01.

EXHIBIT "A"

ON-THE-JOB TRANING

A. Construction Equipment Operator (CEO) DOT 859.683 010
Plant Equipment Operator (PEO) DOT 570.682 014

The major on-the-job training processes in which the CEO-PEO apprentices will be trained shall include approximately 6,000 hours in one or more of the following areas:

1. Safety training in working around other equipment and workers on the ground.

2. Track type equipment: Dozers, pushcats, crawler loaders track-type backhoes, all types of paving machines, screedman, including CTB machines, tractor-drawn scrapers and track-type trenching equipment

3. Rubber-tire-type equipment: Scrapers. Rubber-tire loader, rubber-tire backhoes, all compactors, combination backhoe loader, blade, hot roller and rubber-tired trenchers.

4. Hoistening-type equipment: Cranes (both crawler-mounted and rubber-tire mounted), derrick hoist, pile driving rigs, power shovels, clamshells, draglines, tower-cranes, and self-propelled boom-type lifting device.

5. Stationary-type equipment: Drilling and boring equipment, crusher operations, concrete batch plants, lube equipment, grade setting and grade checking.

B. Heavy Duty Repairer (HDR) DOT 620.261 022

The major on-the-job training processes in which the HDR apprentices will be trained shall include approximately 6,000 hours in the following areas:

1. Safety training in working around equipment, using power (both pneumatic and electrical) hand tools and proper maintenance/repair procedures.

2. Engines: Theory, operation, maintenance, and repair to gasoline engines, diesel engines, fuel systems, cooling systems, and intake exhaust systems.

3. Power Trains: Clutches, torque converters, transmissions, differentials, and final drives

4. Electrical: Starting systems, charging systems, lighting systems, control systems, and electronic controls.

5. Hydraulic: Control valves, hydraulic cylinders, hydraulic motors, pumps, and brake systems

6. Welding: Theory, Stick welding (SMAW), wire/flux core welding, oxygen/acetylene cutting and burning, and fabrication/layout.

7. Lubrication: Preventative maintenance, grease and oil, lubrication procedures, and minor adjustments

C. Construction Inspector **DOT 182.267 010**

The major on-the-job training processes in which a Construction Inspector will be trained shall include a minimum of 6,000 hours in the following areas:

1. Proper general safety procedures in working on a construction site. This will include working around mobile equipment, proper use of scaffolding, and proper training in fall protection.

2. Soils Technician will be trained to perform the following:
   a. Write a daily report,
   b. Read and interpret plans,
   c. Use a nuclear density gauge,
   d. Understand basic terms for soils and soils density,
   e. Know procedures to compacting soil,
   f. Log a sand cone test,
   g. Log a maximum density test,
   h. Log a sieve analysis test,
   i. Calibrate soils testing equipment, and
   j. Classify different types of soils.

3. Reinforced Concrete training will include the following:
   a. Write a daily report
   b. Read and interpret plans, check reinforced steel for size, spacing, clearances and splices
   c. Check a concrete mix design
   d. Know the proper technique for sampling concrete
   e. Know the proper technique for water control
   f. Know the proper technique for placing concrete

4. Pre-Stressed Concrete training will include the following:
   a. Write a daily report
   b. Read and interpret plans
   c. Check reinforced steel for size, spacing, clearances, and splices
   d. Verify the placement of pre-stressed or post-tensioned tendons
   e. Prepare stressing sheets
   f. Check a mix design
   g. Know the proper technique for placing concrete
   h. Know the proper procedures for stressing tendons and recording results

5. Masonry training will include the following:
   a. Properly write a daily report
   b. Read and interpret plans
   c. Check reinforced steel for size, spacing, clearances, and splices
   d. Witness and store completed masonry prisms
   e. Identify concrete masonry units, pre-bagged mortar, or grout
   f. Know the proper technique for placing of grout into concrete masonry units
   g. Know the proper technique for consolidation of grout with a vibrator

6. Structural Steel and Welding Inspector training will include the following:
   a. Write a daily report
   b. Read and interpret plans
   c. Check steel delivered to the jobsite with mill certifications and heat numbers
   d. Read a welding procedure specification
   e. Check a welder's certificate
   f. Check for proper joint fit and configuration
   g. Check for proper pre-heat an post-heat
   h. Properly use and store electrodes
   i. Observe interpass cleaning
   j. Perform a shop inspection
   k. Identify and verify the tension of high strength bolts

D. Rock Sand & Gravel **DOT 859.683 01K**

The major on-the-job training processes in which RSG/PO apprentices will be trained shall include a minimum of 6,000 hours in the following areas:

1. Safety training in working around surface mining operations. This will include safety in working around mobile equipment, working around conveyors, belts and crushers, plant maintenance and repair.

2. Welding:
   a. Theory
   b. Stick welding (SMAW)
   c. Wire/flux core welding
   d. Oxygen/acetylene cutting and burning
   e. Fabrication

3. Equipment Operation:
   a. Rubber-tired loaders
   b. Dozers
   c. Graders

4. Repair Procedures
    a. Pneumatic
    b. Hydraulic
    c. Industrial electrical components
    d. Circuits

5. Rock Plant Maintenance
    a. Disassembly
    b. Diagnosis
    c. Repair
    d. Assembly
    e. Adjustments

E. Dredge **DOT 850.663 010**

The major on-the-job training processes in which Dredge apprentices will be trained shall include a minimum of 6,000 hours in the following areas:

1. Safety training in working around mobile equipment during shore operations; maintenance and repair on both shore, deck, and engine room operations; and proper training using powered (both pneumatic and electrical) hand tools.

2. Shore Operations

    a. Hook place, and handle discharge pipe
    b. Demonstrate knowledge in spillways, dykes, and grading
    c. Welder's helper
    d. Boom truck operation
    e. Winch operation
    f. Tractor operation

3. Deck Operations:
    a. Care and placing of pontoon lines and anchors
    b. Painting, chipping, and cleaning of ship
    c. Rigging, splicing rope and cable
    d. Operation of deck equipment
    e. Maintenance of deck equipment
    f. Welding operations
    g. Sounding and engineering
    h. Boat and skiff handling
    i. Pump repair and maintenance
    j. Read and understand gauges and meters
    k. Learn lever controls
    l. Learn the job of leverman using prints and cross sections
    m. Learn leverman's responsibility in directing all operations
    n. Seamanship

4. Engine Room Operations:
   a. Proper use of gauges, meters, and keeping a log
   b. Use of real scow and fuel scow
   c. Electrical gas and diesel repair and maintenance
   d. Pump, shaft, and bearing maintenance and installation.

EXHIBIT "B"

RELATED AND SUPPLEMENTAL INSTRUCTION TOPICS FOR OPERATING ENGINEERS TRAINING CRITERIA

A. Construction Equipment Operator **859.683 010**
Plant Equipment Operator **570.682 014**

1. Safety
2. Track equipment
3. Rubber-tired type equipment
4. Hoistening type equipment
5. Stationary type equipment
6. Grade Checking and Grade Setting

B. Heavy Duty Repairer **620.261 022**

1. Safety
2. Engines
3. Power Trains
4. Electrical Systems
5. Hydraulic Systems
6. Welding
7. Lubrication

C. Construction Inspector **182.267 010**

1. Safety
2. Soils
3. Reinforced Concrete
4. Pre-Stressed Concrete
5. Masonry
6. Structural Steel and Welding

D. Rock Sand & Gravel **859.683 01K**

1. Safety
2. Welding
3. Track Equipment
4. Rubber-Tired Equipment
5. Component Repair
6. Plant Disassembly/Assembly

E. Dredge **850.663 010**

1. Safety
2. Shore Operations
3. Deck Operations
4. Engine Room Operations

The above minimum training criteria for operating engineers apprenticeship training programs is hereby adopted and submitted for approval to the Chief of Apprenticeship Standards on this 22nd day of July in the year 2004.

For the Advisory Committee:

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