



# Heavy Equipment Operator & Operating Engineer

Youth Apprenticeship

## HEAVY EQUIPMENT OPERATOR & OPERATING ENGINEER

---

Heavy Equipment Operators and Operating Engineer youth apprentices learn fundamental construction skills for commercial and residential developments, dams, roadways, etc. They learn blueprint reading, site layout, working safely, and the operation of tools and equipment.

**Length of Apprenticeship:** One year

## COMPETENCIES

---

Youth apprentices work with a job site mentor to demonstrate the following competencies.

Youth apprentices must complete a total of **14** competencies. **Thirteen** must be from the list below. If necessary, employers can substitute **1** competency with another occupationally appropriate skill. That skill should be added to the competency list for assessment.

**Note the following pieces of equipment are prohibited for use by Youth Apprentices under the age of 18: aerial lift, skid steer, compactor, and forklift.**

Competencies
1. Read blueprints, site plans and specifications
2. Define site specific layout needs
3. Identify equipment related safety hazards
4. Describe uses for each piece of heavy equipment
5. Operate generators and compressors
6. Perform daily maintenance on equipment (Note: YAs cannot turn on prohibited equipment during daily maintenance)
7. Apply math skills to heavy equipment operation
8. Follow worksite health and safety practices
9. Maintain an organized and safe work area
10. Use hand and voice signals (Note: YAs cannot use hoisting equipment)
11. Assist with repair and maintenance of equipment (Note: YAs cannot turn on prohibited equipment during repair and maintenance)
12. Assist with establishing grade
13. Assist with clearing and manual excavation of site (Note: For trenches, piers, foundations, and holes excavation is limited to 4 feet in depth or less)
14. Operate tools and equipment safely (i.e., drill, torch welder)



# Heavy Equipment Operator & Operating Engineer

Youth Apprenticeship  
ON-THE-JOB LEARNING PERFORMANCE STANDARDS GUIDE

## YOUTH APPRENTICE INFORMATION

Youth Apprentice Name	
YA Coordinator	YA Consortium
School District	High School Graduation Date

## REQUIREMENTS

### Level One Requirements

Youth apprentices must complete ALL the items listed below. Check completed areas.

- Competency checklist
- Employability Skills checklist (in this OJL Guide) or the DPI Employability Skills Certificate
- Related instruction equal to 1 high school credit or at least 3 college credits
- Minimum of 450 work hours

## HOURS

Record the hours the youth apprentice worked.

Total Hours Employed	Company Name	Telephone Number

## COMPETENCIES

Youth apprentices must complete a total of **14** competencies. **Thirteen** must be from the list below. If necessary, employers can substitute **1** competency with another occupationally appropriate skill. That skill should be added to the competency list for assessment.

### Rating Scale

3: Exceeds entry level criteria | Requires minimal supervision | Consistently displays this behavior

2: Meets entry level criteria | Requires some supervision | Often displays this behavior

1: Needs improvement | Requires much assistance and supervision | Rarely displays this behavior

Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
<b>1. Read blueprints, site plans, and specifications</b> <ul style="list-style-type: none"> <li>relate the project documents to the parties in the project</li> <li>relate drawing to job task</li> <li>interpret elements and symbols</li> <li>locate worksite features on a construction plan</li> <li>convert scaled measurements to full measurements</li> <li>translate specifications to work requirements</li> <li>read a ruler/scale</li> <li>read typical sections, cross sections, and profiles</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2. Define site specific layout needs</b> <ul style="list-style-type: none"> <li>translate the construction documents to the job site</li> <li>examine the various roles in the development of the project</li> <li>interpret special conditions and needs to the project and site</li> <li>layout the work</li> <li>interpret utility location markings</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3. Identify equipment related safety hazards</b> <ul style="list-style-type: none"> <li>recognize potentially hazardous locations, conditions, and procedures</li> <li>avoid potential hazards</li> <li>wear appropriate safety gear and personal protective equipment (PPE)</li> <li>pay attention to signs, tags, barricades and lockout/tagout devices</li> <li>report hazards to appropriate personnel</li> <li>take initiative to correct hazards</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4. Describe uses for each piece of heavy equipment</b> <ul style="list-style-type: none"> <li>explain equipment purposes</li> <li>describe equipment capabilities</li> <li>explain advantages and limitations of using the equipment</li> <li>correlate equipment with attachments</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
<b>5. Operate generators and compressors</b> <ul style="list-style-type: none"> <li>• layout a work plan</li> <li>• don personal protective equipment (PPE)</li> <li>• perform prestart inspection</li> <li>• start up the machine</li> <li>• manipulate controls to operate equipment</li> <li>• follow safety procedures avoiding hazards</li> <li>• work in a timely manner</li> <li>• follow a safe shutdown procedure</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6. Perform daily maintenance on equipment (Note: YAs cannot turn on prohibited equipment during daily maintenance)</b> <ul style="list-style-type: none"> <li>• inspect equipment</li> <li>• perform minor repairs</li> <li>• lubricate equipment</li> <li>• clean equipment</li> <li>• secure equipment</li> <li>• document maintenance</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7. Apply math skills to heavy equipment operation</b> <ul style="list-style-type: none"> <li>• select and use measuring tools</li> <li>• scale proportions</li> <li>• utilize stationing</li> <li>• convert between engineer scale and architectural scale</li> <li>• calculate and convert area, volume, and tonnages</li> <li>• determine slope and elevations</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8. Follow worksite health and safety practices</b> <ul style="list-style-type: none"> <li>• use appropriate clothing and personal protective equipment (PPE)</li> <li>• comply with job site safety and security rules and regulations</li> <li>• identify and report unsafe job conditions</li> <li>• report injuries and damage to property to supervisor</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9. Maintain an organized and safe work area</b> <ul style="list-style-type: none"> <li>• clean and maintain materials and tools</li> <li>• clean, organize, and put way items in the work area</li> <li>• store materials and tools</li> <li>• follow facility procedures for clean-up and shut down</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Competency and Rating Criteria	Minimum Rating of 2 for EACH Check Rating		
	1	2	3
<p><b>10. Use hand and voice signals (Note: YAs cannot use hoisting equipment)</b></p> <ul style="list-style-type: none"> <li>• select appropriate signal</li> <li>• give the signal</li> <li>• confirm receipt of the signal</li> <li>• interpret the meaning of the signal</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b>11. Assist with repair and maintenance of equipment (Note: YAs cannot turn on prohibited equipment during repair and maintenance)</b></p> <ul style="list-style-type: none"> <li>• perform equipment inspections</li> <li>• locate documentation needed</li> <li>• assist to diagnose common concerns</li> <li>• check for and replace worn or damaged parts</li> <li>• maintain fluid levels</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b>12. Assist with establishing grade</b></p> <ul style="list-style-type: none"> <li>• set up and level the laser</li> <li>• tie in an verify local benchmarks</li> <li>• determine existing elevations</li> <li>• calculate cuts or fills</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b>13. Assist with clearing and manual excavation of site (Note: For trenches, piers, foundations, and holes excavation is limited to 4 feet in depth or less)</b></p> <ul style="list-style-type: none"> <li>• hand clear sites</li> <li>• dig trenches</li> <li>• maintain a level grade</li> <li>• verify existing utilities</li> <li>• follow safety procedures</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b>14. Operate tools and equipment safely (i.e., drill, torch welder)</b></p> <ul style="list-style-type: none"> <li>• select the right tool for the task</li> <li>• verify tool is in working order</li> <li>• don personal protective equipment (PPE)</li> <li>• use guarding devices if applicable</li> <li>• follow safety procedures avoiding hazards</li> <li>• perform preventative maintenance</li> <li>• follow a safe shutdown procedure</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b>Competency Substitute</b> (if you replaced a competency above, note the competency and rating)</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>