

# 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

### **REQUIRED COMPETENCIES**

Youth apprentices must become proficient in both general employability and occupation-specific competencies. All of these, and examples of how each can be demonstrated, are found in the following pages. A total of 14 occupational competencies must be learned for this occupation. Employers may substitute out one of these and should write in the competency they are adding. Youth apprentices must be evaluated on these competencies at least two times each year of their apprenticeship.

#### Youth Apprentices must also complete the following safety training:

- ☐ First Aid Certification
- ☐ Occupational Safety and Health Administration (OSHA) 10 or 30 Certification

**Safety Considerations:** Youth apprentices under the age of 18 are prohibited from using arial lifts, skid steers, compactors, and forklifts. For trenches, piers, foundations, and holes excavation is limited to 4 feet in depth or less.

#### **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)

### **APPRENTICESHIP BRIDGING OPPORTUNITIES**

The following Registered Apprenticeship is available in this area:

• Heavy Equipment Operator and Operating Engineer

### **POST-SECONDARY PATHWAY OPPORTUNITIES**

There are several post-secondary pathway opportunities in this area. The following is a partial list.

- Construction Management Technology
- Construction Safety Technology



# Heavy Equipment Operator & Operating Engineer

Youth Apprenticeship ON-THE-JOB LEARNING PERFORMANCE STANDARDS GUIDE

## YOUTH APPRENTICE INFORMATION

TOOTH ALL REIGHTEE HAT ORIVIATION	
Youth Apprentice Name	
YA Coordinator	
YA Consortium	
School District	
SIGNATURES	
The On-the-Job Learning Performance Standards	Guide includes a list of competencies youth
apprentices learn through mentoring and training	·
should be reviewed with the employer/mentor, s the youth apprentice to record progress and plan competencies. Mentors, school-based/YA coordin	yer/Mentor
1 <sup>st</sup> Evaluation (Required) Employer/Mentor Signature	2 <sup>nd</sup> Evaluation (Required)  Employer/Mentor Signature
Employer, Mentor Signature	Employer/Mentol Signature
Employer/Mentor	Employer/Mentor
Business/Company	Business/Company
Date Signed	Date Signed
3 <sup>rd</sup> Evaluation (Optional)	4th Evaluation (Optional)
Employer/Mentor Signature	Employer/Mentor Signature
Employer/Mentor	Employer/Mentor
Business/Company	Business/Company
Date Signed	Date Signed

# **School-Based and/or YA Coordinator**

### 1<sup>st</sup> Evaluation (Required)

# 2<sup>nd</sup> Evaluation (Required)

School-Based and/or YA Coordinator Signature	School-Based and/or YA Coordinator Signature
School-Based and/or YA Coordinator	School-Based and/or YA Coordinator
School District or Organization	School District or Organization
Date Signed	Date Signed

# 3<sup>rd</sup> Evaluation (Optional)

### 4th Evaluation (Optional)

School-Based and/or YA Coordinator Signature	School-Based and/or YA Coordinator Signature
School-Based and/or YA Coordinator	School-Based and/or YA Coordinator
School District or Organization	School District or Organization
Date Signed	Date Signed

# **Youth Apprentice**

### 1<sup>st</sup> Evaluation (Required)

# 2<sup>nd</sup> Evaluation (Required)

Youth Apprentice Signature	Youth Apprentice Signature
Youth Apprentice	Youth Apprentice
School District / High School	School District / High School
Date Signed	Date Signed

# 3<sup>rd</sup> Evaluation (Optional)

### 4th Evaluation (Optional)

Youth Apprentice Signature	Youth Apprentice Signature
Youth Apprentice	Youth Apprentice
School District / High School	School District / High School
Date Signed	Date Signed

# EMPLOYABILITY SKILLS (TO BE COMPLETED BY YA EMPLOYER/MENTOR)

All youth apprentices must demonstrate the key employability skills listed below in order to complete the YA program. They do so by earning at least a "Meets Expectation" rating in each. **At least two evaluations are required each year of a youth apprenticeship.** More columns are included below for those who choose to conduct more frequent reviews.

1	Working to Meet Expectations: Needs improvement; requires much assistance and supervision;
	rarely displays this behavior
2	Meets Expectations: Meets entry-level criteria; requires some supervision; often displays this
	behavior
3	Exceeds Expectations: Exceeds entry-level criteria; requires minimal supervision; consistently
	displays this behavior

	Employability Skills		Rati	ng	
	Competency and Rating Criteria	Initial	Mid Year 1	Mid Year 2	Final
1.	Develops positive work relationships with others.  Examples of qualities and habits that the employee might exhibit include:  Interacts with others with respect and in a non-judgmental manner  Responds to others in an appropriate and non-offensive manner  Helps co-workers and peers accomplish tasks or goals  Applies problem-solving strategies to improve relations with others  When managing others, shows traits such as compassion, listening, coaching, team development, and appreciation	☐ 1 ☐ 2 ☐ 3			
2.	<ul> <li>Communicates effectively with others</li> <li>Examples of qualities and habits that the employee might exhibit include</li> <li>Adjusts the communication approach for the target audience, purpose, and situation to maximize impact</li> <li>Organizes messages/information in a logical and helpful manner</li> <li>Speaks clearly and writes legibly</li> <li>Models behaviors to show active listening</li> <li>Applies what was read to actual practice</li> <li>Asks appropriate questions for clarity</li> </ul>	☐ 1 ☐ 2 ☐ 3			
3.	<ul> <li>Collaborates with others</li> <li>Examples of qualities and habits that the employee might exhibit include</li> <li>Works effectively in teams with people of diverse backgrounds regardless of sex, race, ethnicity, nationality, sexuality, religion, political views, and abilities</li> <li>Shares responsibility for collaborative work and decision making</li> <li>Uses the problem-solving process to work through differences of opinion in a constructive manner to achieve a reasonable compromise</li> <li>Avoids contributing to an unproductive group conflict         Shares information and carries out responsibilities in a timely manner     </li> </ul>	☐ 1 ☐ 2 ☐ 3			

	Employability Skills		Rati	ing	
	Competency and Rating Criteria	Initial	Mid Year 1	Mid Year 2	Final
4.	<ul> <li>Maintains composure under pressure</li> <li>Examples of qualities and habits that the employee might exhibit include</li> <li>Uses critical thinking to determine the best options or outcomes when faced with a challenging situation</li> <li>Carries out assigned duties while under pressure</li> <li>Acts in a respectful, professional, and non-offensive manner while under pressure</li> <li>Applies stress management techniques to cope under pressure</li> </ul>	□ 1 □ 2 □ 3	☐ 1 ☐ 2 ☐ 3	□ 1 □ 2 □ 3	□1 □2 □3
5.	Demonstrates integrity  Examples of qualities and habits that the employee might exhibit include  Carries out responsibilities in an ethical, legal and confidential manner  Responds to situations in a timely manner  Takes personal responsibility to correct problems  Models behaviors that demonstrate self-discipline, reliability, and dependability	☐ 1 ☐ 2 ☐ 3	☐ 1 ☐ 2 ☐ 3	☐ 1 ☐ 2 ☐ 3	□ 1 □ 2 □ 3
6.	Performs quality work  Examples of qualities and habits that the employee might exhibit include  Carries out written and verbal directions accurately  Completes work efficiently and effectively  Performs calculations accurately  Conserves resources, supplies, and materials to minimize costs and environmental impact  Uses equipment, technology, and work strategies to improve workflow  Applies problem-solving strategies to improve productivity  Adheres to worksite regulations and practices  Maintains an organized work area	☐ 1 ☐ 2 ☐ 3			
7.	<ul> <li>Provides quality goods or services (internal and external)</li> <li>Examples of qualities and habits that the employee might exhibit include</li> <li>Shows support for the organizational goals and principles by own personal actions</li> <li>Displays a respectful and professional image to customers</li> <li>Displays an enthusiastic attitude and desire to take care of customer needs</li> <li>Seeks out ways to increase customer satisfaction</li> <li>Produces goods to workplace specifications</li> </ul>	☐ 1 ☐ 2 ☐ 3	☐ 1 ☐ 2 ☐ 3	☐ 1 ☐ 2 ☐ 3	□1 □2 □3
8.	<ul> <li>Shows initiative and self-direction</li> <li>Examples of qualities and habits that the employee might exhibit include</li> <li>Prioritizes and carries out responsibilities without being told</li> <li>Responds with enthusiasm and flexibility to handle tasks that need immediate attention</li> <li>Reflects on any unsatisfactory outcome as an opportunity to learn</li> <li>Improves personal performance by doing something different or differently</li> <li>Analyzes how own actions impact the overall organization</li> <li>Supports own action with sound reasoning and principles</li> <li>Balances personal activities to minimize interference with work responsibilities</li> </ul>	☐ 1 ☐ 2 ☐ 3			

Employability Skills		Rati	ing	
Competency and Rating Criteria	Initial	Mid Year 1	Mid Year 2	Final
<ul> <li>9. Adapts to change         Examples of qualities and habits that the employee might exhibit include Shows flexibility and willingness to learn new skills for various job roles         <ul> <li>Uses problem-solving and critical-thinking skills to cope with changing circumstances</li> <li>Modifies own work behavior based on feedback, unsatisfactory outcomes, efficiency, and effectiveness</li> <li>Displays a "can do" attitude</li> </ul> </li> </ul>	□ 1	☐ 1	□ 1	□1
	□ 2	☐ 2	□ 2	□2
	□ 3	☐ 3	□ 3	□3
<ul> <li>10. Demonstrates safety and security regulations and practices         Examples of qualities and habits that the employee might exhibit include</li> <li>Follows personal safety requirements</li> <li>Maintains a safe work environment</li> <li>Demonstrates professional role in an emergency</li> <li>Follows security procedures</li> <li>Maintains confidentiality</li> </ul>	☐ 1	☐ 1	☐ 1	□ 1
	☐ 2	☐ 2	☐ 2	□ 2
	☐ 3	☐ 3	☐ 3	□ 3
<ul> <li>11. Applies job-related technology, information, and media  Examples of qualities and habits that the employee might exhibit include</li> <li>Applies technology effectively in the workplace</li> <li>Assesses and evaluates information on the job</li> <li>Assesses training manuals, website, and other media related to the job</li> </ul>	☐ 1	☐ 1	☐ 1	☐ 1
	☐ 2	☐ 2	☐ 2	☐ 2
	☐ 3	☐ 3	☐ 3	☐ 3
<ul> <li>12. Fulfills training or certification requirements for employment         Examples of this requirement may include</li> <li>Participation in required career-related training and/or educational programs</li> <li>Passing certification tests to qualify for licensure and/or certification</li> <li>Participation in company training or orientation</li> </ul>	☐ 1	☐ 1	☐ 1	☐ 1
	☐ 2	☐ 2	☐ 2	☐ 2
	☐ 3	☐ 3	☐ 3	☐ 3
<ul> <li>13. Sets personal goals for improvement</li></ul>	□ 1	□ 1	□1	□1
	□ 2	□ 2	□2	□2
	□ 3	□ 3	□3	□3

# OCCUPATIONAL COMPETENCIES (TO BE COMPLETED BY YA EMPLOYER/MENTOR)

Youth Apprentices must earn a rating of at least "MEETS EXPECTATIONS" in each competency by the conclusion of the apprenticeship. A total of 14 competencies, 13 must be from the list below. Employers may substitute out one of these and should write in the competency they are adding. At least two evaluations are required each year of a youth apprenticeship. More columns are included below for those who choose to conduct more frequent reviews.

Yout	h Apprentices must also complete the following safety training:  First Aid Certification
	Occupational Safety and Health Administration (OSHA) 10 or 30 Certification
1	Working to Meet Expectations: Needs improvement; requires much assistance and supervision;
	rarely displays this behavior
2	Meets Expectations: Meets entry-level criteria; requires some supervision; often displays this
	behavior
3	Exceeds Expectations: Exceeds entry-level criteria; requires minimal supervision; consistently
	displays this behavior

	Occupational Competencies		Rat	ing	
			Eva	luation	
		Mii		ating of 2	<b>EACH</b>
	Competency and Rating Criteria			k Rating	T
		Initial	Mid	Mid	Final
	Baralli and the street and the stree		Year 1	Year 2	
1.	Read blueprints, site plans, and specifications	□ 1	□ 1	□ 1	□ 1
	relate the project documents to the parties in the project	□ 2	□ 2	□ 2	□ 2
	relate drawing to job task	□ 3	□ 3	□ 3	□ 3
	interpret elements and symbols				
	locate worksite features on a construction plan				
	convert scaled measurements to full measurements				
	translate specifications to work requirements				
	read a ruler/scale				
	<ul> <li>read typical sections, cross sections, and profiles</li> </ul>				
2.	Define site specific layout needs	<u></u> 1	<b>□</b> 1	<b>□</b> 1	<b>□</b> 1
	<ul> <li>translate the construction documents to the job site</li> </ul>	□2	□2	□2	□2
	<ul> <li>examine the various roles in the development of the project</li> </ul>	 3	 3	 □3	 3
	<ul> <li>interpret special conditions and needs to the project and site</li> </ul>				
	layout the work				
	interpret utility location markings				
3.	Identify equipment related safety hazards	□ 1	□ 1	□ 1	□ 1
	<ul> <li>recognize potentially hazardous locations, conditions, and procedures</li> </ul>	□2	□2	□2	□2
	avoid potential hazards	 3	 3	 3	 3
	• wear appropriate safety gear and personal protective equipment (PPE)				
	<ul> <li>pay attention to signs, tags, barricades and lockout/tagout devices</li> </ul>				
	<ul> <li>report hazards to appropriate personnel</li> </ul>				
	take initiative to correct hazards				

	Occupational Competencies		Rat	ing	
	•		Eva	luation	
		Mil	nimum R	ating of 2	<b>EACH</b>
	Competency and Rating Criteria		Chec	k Rating	
		Initial	Mid Year 1	Mid Year 2	Final
4.	Describe uses for each piece of heavy equipment	□ 1	□ 1	□ 1	□ 1
	explain equipment purposes	□2	□2	□2	□ 2
	describe equipment capabilities		 □3	 3	 3
	<ul> <li>explain advantages and limitations of using the equipment</li> </ul>	"			
	correlate equipment with attachments				
5.	Operate generators and compressors	<b>□</b> 1	<b>□</b> 1	<b>□</b> 1	<u> </u>
	layout a work plan	□ 2	□ 2	□ 2	□ 2
	<ul> <li>don personal protective equipment (PPE)</li> </ul>	<b>□</b> 3	<b>□</b> 3	<b>□</b> 3	<b>□</b> 3
	perform prestart inspection				
	start up the machine				
	manipulate controls to operate equipment				
	<ul> <li>follow safety procedures avoiding hazards</li> </ul>				
	work in a timely manner				
	follow a safe shutdown procedure				
6.	Perform daily maintenance on equipment (Note: YAs cannot turn on	□ 1	<b>□</b> 1	□ 1	□ 1
	prohibited equipment during daily maintenance)	□ 2	□ 2	□ 2	□ 2
	inspect equipment	<b>□</b> 3	<b>□</b> 3	<b>□</b> 3	<b>□</b> 3
	perform minor repairs				
	Iubricate equipment				
	clean equipment				
	secure equipment				
	document maintenance				
7.	Apply math skills to heavy equipment operation	□ 1	□ 1	□ 1	□ 1
	select and use measuring tools	□ 2	□ 2	□ 2	□ 2
	scale proportions	☐ 3	□ 3	□ 3	□ 3
	utilize stationing				
	convert between engineer scale and architectural scale				
	calculate and convert area, volume, and tonnages				
	determine slope and elevations				
8.	Follow worksite health and safety practices	□ 1	<b>□</b> 1	□ 1	<b>□</b> 1
	use appropriate clothing and personal protective equipment (PPE)	□ 2	□ 2	□ 2	□ 2
	comply with job site safety and security rules and regulations	□ 3	□ 3	□ 3	□ 3
	identify and report unsafe job conditions				
<u> </u>	report injuries and damage to property to supervisor				
9.	Maintain an organized and safe work area	□ 1	□ 1		
	clean and maintain materials and tools	□ 2	□ 2	□ 2	□ 2
	clean, organize, and put way items in the work area	□ 3	□3	□3	□ 3
	store materials and tools				
	follow facility procedures for clean-up and shut down				

Occupational Competencies	Rating				
·	Evaluation				
	Minimum Rating of 2 EACH				
Competency and Rating Criteria		Chec	Check Rating		
		Mid	Mid		
	Initial	Year 1	Year 2	Final	
10. Use hand and voice signals (Note: YAs cannot use hoisting equipment)	□ 1	□ 1	□ 1	□ 1	
select appropriate signal	□2	□2	□2	<b>□2</b>	
give the signal					
confirm receipt of the signal					
interpret the meaning of the signal					
11. Assist with repair and maintenance of equipment (Note: YAs cannot	<b>□</b> 1	<b>□</b> 1	<b>□</b> 1	<b>□1</b>	
turn on prohibited equipment during repair and maintenance)				 2	
perform equipment inspections	□ <del>-</del>	□ <del>-</del>	□ <del>-</del>	□ 3	
locate documentation needed		<b>3</b>		🗆 •	
assist to diagnose common concerns					
check for and replace worn or damaged parts					
maintain fluid levels					
12. Assist with establishing grade	<b>□</b> 1	<b>□</b> 1	<b>□</b> 1	<b>□1</b>	
set up and level the laser	_ 2	_ 2	_ 2	_ 2	
tie in an verify local benchmarks	□ - □ 3	☐ 3	☐ 3	□ -	
determine existing elevations	🗀 🤊	🗆 🤊	🗆 🤊	🗀 🕽	
calculate cuts or fills					
13. Assist with clearing and manual excavation of site (Note: For trenches,	□ 1	□ 1	□ 1	1	
piers, foundations, and holes excavation is limited to 4 feet in depth	□ 2	□ 2	□ 2	□ 2	
or less)	□3	□3	□3	П3	
hand clear sites					
dig trenches					
maintain a level grade					
verify existing utilities					
follow safety procedures					
14. Operate tools and equipment safely (i.e., drill, torch welder)	<b>□</b> 1	1	1	1	
select the right tool for the task	□ 2	□ 2	□ 2	□ 2	
verify tool is in working order	 3	 3	 3	 3	
don personal protective equipment (PPE)					
use guarding devices if applicable					
<ul> <li>follow safety procedures avoiding hazards</li> </ul>					
perform preventative maintenance					
follow a safe shutdown procedure					

Occupational Competencies	Rating			
	Evaluation Minimum Rating of 2 EACH Check Rating			
Competency and Rating Criteria				
, , , -		Mid	Mid	
	Initial	Year 1	Year 2	Final
Competency Substitute (if you replaced a competency above, note the	<b>□</b> 1	<b>□</b> 1	<b>□</b> 1	<b>□</b> 1
competency and rating)	☐ <b>2</b>	☐ 2	☐ <b>2</b>	☐ 2
competency and ruting,				
	□ 3	□ 3	□ 3	□ 3
Comments:				

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