



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
<ol style="list-style-type: none">1. Read blueprints, site plans and specifications2. Define site specific layout needs3. Identify equipment related safety hazards4. Describe uses for each piece of heavy equipment5. Operate generators and compressors6. Perform daily maintenance on equipment (Note: YAs cannot turn on prohibited equipment during daily maintenance)7. Apply math skills to heavy equipment operation8. Follow worksite health and safety practices9. Maintain an organized and safe work area10. 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 grade13. 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)

REGISTERED 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



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ON-THE-JOB LEARNING PERFORMANCE STANDARDS GUIDE

YOUTH APPRENTICE INFORMATION

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 at the worksite.

Instructions for the Worksite Employers/Mentors and School-Based or YA coordinators: This document should be reviewed with the employer/mentor, school-based or YA coordinator on a regular basis with the youth apprentice to record progress and plan future steps to ensure completion of the required competencies. Mentors, school-based/YA coordinator, and the apprentice sign below.

<u>Employer/Mentor</u>	
1st Evaluation (Required)	2nd Evaluation (Required)
Employer/Mentor Signature	Employer/Mentor Signature
Employer/Mentor	Employer/Mentor
Business/Company	Business/Company
Date Signed	Date Signed

3rd 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**1st Evaluation (Required)****2nd 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

3rd 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**1st Evaluation (Required)****2nd Evaluation (Required)**

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

3rd 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

Competency and Rating Criteria	Rating			
	Initial	Mid Year 1	Mid Year 2	Final
1. Develops positive work relationships with others. <i>Examples of qualities and habits that the employee might exhibit include:</i> <ul style="list-style-type: none">• 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	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
2. Communicates effectively with others <i>Examples of qualities and habits that the employee might exhibit include . . .</i> <ul style="list-style-type: none">• Adjusts the communication approach for the target audience, purpose, and situation to maximize impact• Organizes messages/information in a logical and helpful manner• Speaks clearly and writes legibly• Models behaviors to show active listening• Applies what was read to actual practice• Asks appropriate questions for clarity	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
3. Collaborates with others <i>Examples of qualities and habits that the employee might exhibit include . . .</i> <ul style="list-style-type: none">• Works effectively in teams with people of diverse backgrounds regardless of sex, race, ethnicity, nationality, sexuality, religion, political views, and abilities• Shares responsibility for collaborative work and decision making• Uses the problem-solving process to work through differences of opinion in a constructive manner to achieve a reasonable compromise• Avoids contributing to an unproductive group conflict Shares information and carries out responsibilities in a timely manner	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			

Competency and Rating Criteria	Rating			
	Initial	Mid Year 1	Mid Year 2	Final
4. Maintains composure under pressure <i>Examples of qualities and habits that the employee might exhibit include . . .</i> <ul style="list-style-type: none"> • Uses critical thinking to determine the best options or outcomes when faced with a challenging situation • Carries out assigned duties while under pressure • Acts in a respectful, professional, and non-offensive manner while under pressure • Applies stress management techniques to cope under pressure 	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
5. Demonstrates integrity <i>Examples of qualities and habits that the employee might exhibit include . . .</i> <ul style="list-style-type: none"> • 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 	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
6. Performs quality work <i>Examples of qualities and habits that the employee might exhibit include . . .</i> <ul style="list-style-type: none"> • 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 	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
7. Provides quality goods or services (internal and external) <i>Examples of qualities and habits that the employee might exhibit include . . .</i> <ul style="list-style-type: none"> • Shows support for the organizational goals and principles by own personal actions • Displays a respectful and professional image to customers • Displays an enthusiastic attitude and desire to take care of customer needs • Seeks out ways to increase customer satisfaction • Produces goods to workplace specifications 	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
8. Shows initiative and self-direction <i>Examples of qualities and habits that the employee might exhibit include . . .</i> <ul style="list-style-type: none"> • Prioritizes and carries out responsibilities without being told • Responds with enthusiasm and flexibility to handle tasks that need immediate attention • Reflects on any unsatisfactory outcome as an opportunity to learn • Improves personal performance by doing something different or differently • Analyzes how own actions impact the overall organization • Supports own action with sound reasoning and principles • Balances personal activities to minimize interference with work responsibilities 	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			

Competency and Rating Criteria	Rating			
	Initial	Mid Year 1	Mid Year 2	Final
9. Adapts to change <i>Examples of qualities and habits that the employee might exhibit include . . . Shows flexibility and willingness to learn new skills for various job roles</i> <ul style="list-style-type: none">• Uses problem-solving and critical-thinking skills to cope with changing circumstances• Modifies own work behavior based on feedback, unsatisfactory outcomes, efficiency, and effectiveness• Displays a "can do" attitude	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
10. Demonstrates safety and security regulations and practices <i>Examples of qualities and habits that the employee might exhibit include . . .</i> <ul style="list-style-type: none">• Follows personal safety requirements• Maintains a safe work environment• Demonstrates professional role in an emergency• Follows security procedures• Maintains confidentiality	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
11. Applies job-related technology, information, and media <i>Examples of qualities and habits that the employee might exhibit include . . .</i> <ul style="list-style-type: none">• Applies technology effectively in the workplace• Assesses and evaluates information on the job• Assesses training manuals, website, and other media related to the job	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
12. Fulfills training or certification requirements for employment <i>Examples of this requirement may include . . .</i> <ul style="list-style-type: none">• Participation in required career-related training and/or educational programs• Passing certification tests to qualify for licensure and/or certification• Participation in company training or orientation	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
13. Sets personal goals for improvement <i>Examples of this requirement may include . . .</i> <ul style="list-style-type: none">• Setting goals that are specific and measurable• Setting work-related goals that align with the organization's mission• Identifying strategies to reach goals• Reflecting on goal progress to regularly evaluate and modify goals	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 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.

Youth 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
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Competency and Rating Criteria	Occupational Competencies			
	Rating			
	Evaluation			
Minimum Rating of 2 EACH				Check Rating
	Initial	Mid Year 1	Mid Year 2	Final
1. Read blueprints, site plans, and specifications <ul style="list-style-type: none">• relate the project documents to the parties in the project• relate drawing to job task• 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• read typical sections, cross sections, and profiles	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
2. Define site specific layout needs <ul style="list-style-type: none">• translate the construction documents to the job site• examine the various roles in the development of the project• interpret special conditions and needs to the project and site• layout the work• interpret utility location markings	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
3. Identify equipment related safety hazards <ul style="list-style-type: none">• recognize potentially hazardous locations, conditions, and procedures• avoid potential hazards• wear appropriate safety gear and personal protective equipment (PPE)• pay attention to signs, tags, barricades and lockout/tagout devices• report hazards to appropriate personnel• take initiative to correct hazards	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			

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

Competency and Rating Criteria	Rating			
	Evaluation			
	Initial	Mid Year 1	Mid Year 2	Final
10. Use hand and voice signals (Note: YAs cannot use hoisting equipment) <ul style="list-style-type: none"> select appropriate signal give the signal confirm receipt of the signal interpret the meaning of the signal 	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
11. Assist with repair and maintenance of equipment (Note: YAs cannot turn on prohibited equipment during repair and maintenance) <ul style="list-style-type: none"> perform equipment inspections locate documentation needed assist to diagnose common concerns check for and replace worn or damaged parts maintain fluid levels 	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
12. Assist with establishing grade <ul style="list-style-type: none"> set up and level the laser tie in and verify local benchmarks determine existing elevations calculate cuts or fills 	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
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) <ul style="list-style-type: none"> hand clear sites dig trenches maintain a level grade verify existing utilities follow safety procedures 	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
14. Operate tools and equipment safely (i.e., drill, torch welder) <ul style="list-style-type: none"> select the right tool for the task verify tool is in working order don personal protective equipment (PPE) use guarding devices if applicable follow safety procedures avoiding hazards perform preventative maintenance follow a safe shutdown procedure 	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			

Occupational Competencies		Rating			
Competency and Rating Criteria		Evaluation <i>Minimum Rating of 2 EACH</i> <i>Check Rating</i>			
		Initial	Mid Year 1	Mid Year 2	Final
Competency Substitute (if you replaced a competency above, note the competency and rating)		<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
Comments:					

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